SONY®

HD TRINITRON® COLOR MONITOR

HDM-1730
HDM-1730E

Chassis No. SCC-D45A-A (HDM-1730)
Chassis No. SCC-D33A-A (HDM-1730E)

HDVS

OPERATION AND MAINTENANCE MANUAL

1st Edition

Serial No. 2000001 and Higher(HDM-1730)

Serial No. 2000001 and Higher(HDM-1730E)

For the customers in the U.S.A.

Warning—This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Important—To insure that the complete system (including this peripheral) is capable of complying with the FCC requirements, it is recommended that the user make sure that the individual equipment of the complete system has a label with one of the following statements.
"This equipment has been tested with a Class A Computing Device and has been found to comply with Part 15 of FCC rules."
—or—
"This equipment complies with the requirements in Part 15 of FCC rules for a Class A Computing Device."
—or equivalent.

For the customers in Canada

This apparatus complies with the Class A limits for radio noise emissions set out in Radio Interference Regulations.

Pour les utilisateaus an Canada

Cet appareil est conforme aux normes Classe A pour bruits radioélectriques, spécifiés dans le Règlement sur le brouillage radioélectrique.

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DO NOT USE THE EXTERNAL DEGAUSSER TO DEMAGNETIZE THE SCREEN.
BE SURE TO USE THE DEGAUSS SWITCH ON THE FRONT PANEL.

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ATTENTION!!

NE PAS UTILISER DE DÉMAGNÉTISEUR EXTÉRITUR POUR DÉMAGNÉTISER L'ÉCRAN.
UTILISER LA TOUCH DE DÉMAGNÉTISATION (DEGAUSS) SUR LE PANNEAU FRONTAL.

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SECTION 1 OPERATION

1-1. Overview

The HDM-1730/1730E is a 17-inch color video monitor for the high definition video systems which conform to the BTA/SMPTE standard.

Adaptable to a variety of input signal format

BTA/SMPTE standard

The monitor has a 16:9 aspect ratio and uses the tri-level bipolar sync, which conforms to the BTA/SMPTE standard, and can receive the BTA S-001/SMPTE 240M standard Y/P_B/P_R signal or GBR signal.

Other input signal formats

Besides the BTA/SMPTE standard signal, the monitor can receive the preceding HDVS format signal* and 525-line-non-interlaced signal (IDTV decoder output).

Two sets of input connectors

The monitor is supplied with two input channels, A and B. You can select either one with the INPUT selector.

High quality picture

Flat and square screen

The monitor employs a Super Fine Pitch Trinitron picture tube whose surface is almost flat and which has a squarely cornered screen, which provides a clear picture on the entire screen.

High picture resolution

The Super Fine Pitch Trinitron picture tube, which has a 0.31 mm phosphor trio pitch, realizes more than 760 TV lines of horizontal resolution.

* RGB signal with a 5:3 aspect ratio
(When the preceding HDVS format signal is input, small pedestal areas (black areas) appear on the right and left of an HD picture.)

Multiple adjustment functions

Sub-control panel in the drawer

The controls are located in the sub-control panel in the drawer, and you can access them easily by pulling out the drawer. On the sub-control panel, there are an aperture control, input mode selector, contrast and brightness preset controls, picture distortion, convergence control, color temperature control, and other controls to adjust the picture.

Seven types of test signals

The built-in test signal generator generates seven test signals; crosshatch, inverted double hatch, flat field, set up, gray scale, dot and PLUGE* signals, for checking the monitor.

Convergence adjustment

The screen is divided into 15 parts, and the convergence of each part is adjusted by the corresponding convergence adjustment circuit. Fine and easy adjustment is possible over all the screen.

Color temperature adjustment

Preset or manually adjusted color temperature is selected by the color temperature selector.

Advanced adjustment circuitry

Aperture compensation

The aperture adjustment circuitry adjusts only the Y signal decoded from a $Y/P_B/P_R$ signal or a GBR signal.

Stable color temperature

Both the beam detector and the pulse adder control the black level, brightness and contrast to keep the color temperature stable for a long time.

Excellent focus characteristics

The electrostatic convergence adjustment circuit, and horizontal and vertical dynamic focus circuit provide an optimum focus over the entire screen.

* PLUGE=Picture Line Up Generating Equipment

Others

Internal or external sync signal which is selectable

You can use the internal sync signal or an external sync signal fed to the EXT SYNC connector, by selecting either one with the SYNC selector. If horizontal and vertical sync signals are fed to the HD and VD connectors respectively, these signals will be selected.

Sync signal display

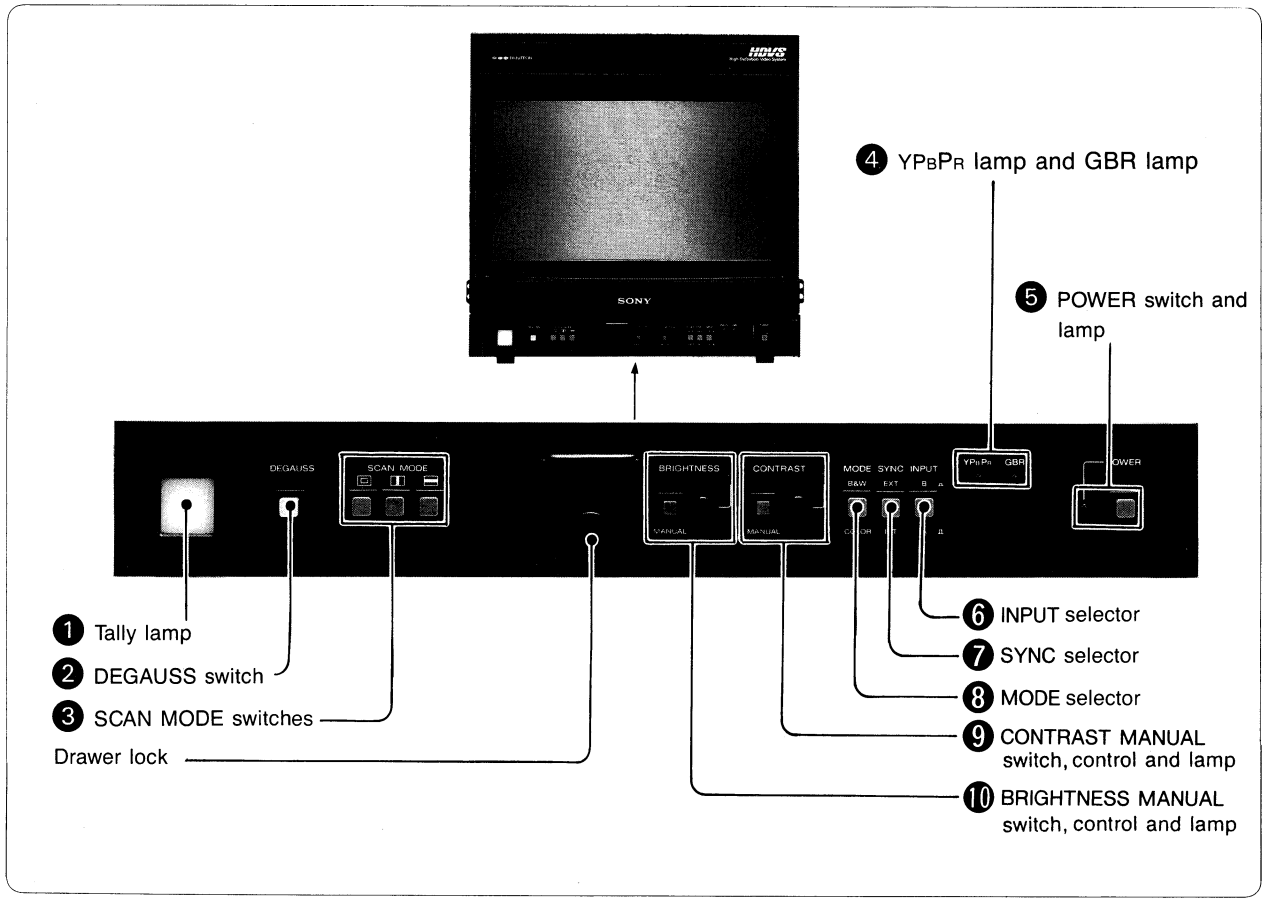
When you press the H delay switch, the horizontal sync signal appears at 1/4 of the screen width from the left of the screen, and when you press the V delay switch, the vertical sync signal appears in the center. To monitor both signals as pulse-cross signal, press both buttons.

EIA standard 19-inch rack mounting possible

The optional SLR-101 slide rails can be attached to the left and right sides of the monitor. This allows the monitor to be mounted in a 19-inch standard rack.

1-2. Location and Functions of Parts and Controls

1-2-1. Front Panel



1 Tally lamp

When the TALLY switch on the sub-control panel is set to ON, this lamp lights while the power of the monitor is on. When the TALLY switch is set to OFF, this lamp does not light.

Open the drawer and insert the supplied number plate of choice.

2 DEGAUSS switch

Press this switch with the unit on to demagnetize the picture tube. This switch does not operate when pressed again right after degaussing has been made. Wait for more than five minutes to use the switch again.

3 SCAN MODE switches

(underscan mode) switch: Press this switch for 3% underscanning. The display size is reduced by approximately 8% and the signal normally scanned outside of the screen is displayed on the screen.

(H delay scan mode) switch: Press this switch to monitor the horizontal sync signal. The picture moves right and the sync signal appears at 1/4 of the screen width from the left of the screen. At this time, the pedestal of the picture increases.

(V delay scan mode) switch: Press this switch to monitor the vertical sync signal. The picture moves down and the sync signal appears in the center of the screen. At this time, the pedestal of the picture increases.

- When you press both the and switches, the picture displays pulse-cross.
- To retrieve the previous mode, press the switch again.

❹ YP_BP_R lamp and GBR lamp
The appropriate lamp lights to indicate the mode of the input signal selected by the INPUT selector ❻. The input mode is selected by the mode switch on the JA board.

❺ POWER switch and lamp
Press to turn on the unit. When power is turned on, the lamp lights and the automatic degaussing circuit is activated to demagnetize the picture tube. The picture will not be stable for about 5 seconds until demagnetization is completed.

❻ INPUT selector
⊓ **A:** To monitor the signal fed to the INPUT A connectors.
⊓̲ **B:** To monitor the signal fed to the INPUT B connectors.

❼ SYNC selector
⊓ **INT:** To use the composite sync signal supplied with the G signal of the GBR signal, or with the Y signal of the $Y/P_B/P_R$ signal.
⊓̲ **EXT:** To use an external sync signal fed to the EXT SYNC connector.
The HD and VD signals, if they are supplied to the HD and VD connectors, have priority over the other two sync signals regardless of the switch setting.

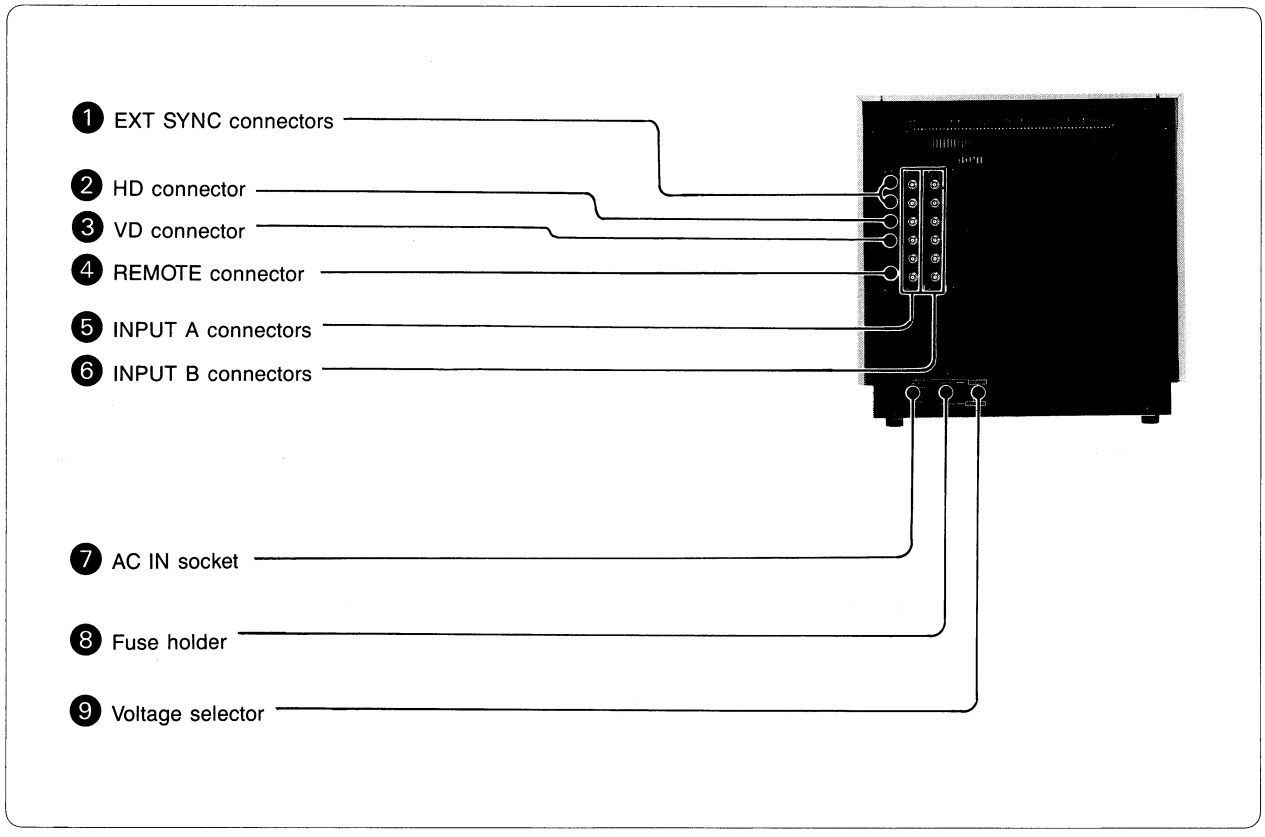
❽ MODE selector
⊓ **COLOR:** To use the monitor in color mode. Normally select this setting.
⊓̲ **B & W:** To set the monitor to black and white operation.

❾ CONTRAST MANUAL switch, control and lamp
Press the switch (the lamp lights) and turn the control to adjust the contrast of the picture. When the lamp is not lit, the contrast level is set to the preset value which has been set by the PRESET CONTRAST control on the JA board.

❿ BRIGHTNESS MANUAL switch, control and lamp
Press the switch (the lamp lights) and turn the control to adjust the brightness of the picture. When the lamp is not lit, the brightness level is set to the preset value which has been set by the PRESET BRIGHT control on the JA board.

⊓ indicates that the switch is not depressed and
⊓̲ indicates that it is depressed.

1-2-2. Rear Panel



1 **EXT (external) SYNC connectors** (BNC)
External sync signal (composite) input. One of the two connectors is used for a bridging connection. If you do not use it, attach the supplied 75-ohm termination plug.

2 **HD (horizontal drive) connector** (BNC)
External horizontal sync signal input. (The input signal is terminated with 75-ohms inside.)

3 **VD (vertical drive) connector** (BNC)
External vertical sync signal input. (The input signal is terminated with 75-ohms inside.)

❹ REMOTE connector (10 pin)

Pin No.	Signal		Pin No.	Signal
	OPEN	GND		
1	COLOR	B & W	6	GND
2	INPUT A	B	7	—
3	TALLY OFF	ON	8	—
4	SYNC INT	EXT	9	—
5	LOCAL	REMOTE	10	—

To remotely control the unit, use the supplied remote connector.
For remote control, set pin No. 5 to GND, and set pin No. 1 through 4 to OPEN or GND according to the desired setting. (Pin No. 6 is connected to GND in the unit. So to ground pin No. 1 through 5, connect it to pin No. 6.) In this case, setting of the INPUT selector ❻, SYNC selector ❼ and MODE selector ❽ on the front panel and the TALLY switch on the sub control panel will become ineffective.
If you set pin No. 5 to OPEN, the remote control operation will become ineffective.

❺ INPUT A connectors (BNC)

❻ INPUT B connectors (BNC)
HDVS signals or 525-line-non-interlaced signals may be used. Set the switches on the JA board according to the format of the input signals. (See "1-4. Setting Switches according to the Input Signals".) To select which input signals, A or B, to monitor, press the INPUT selector on the front panel.
Each input has a connector for a bridging connection. If you do not use the connector for the bridging connection, attach the supplied 75-ohm termination plug.

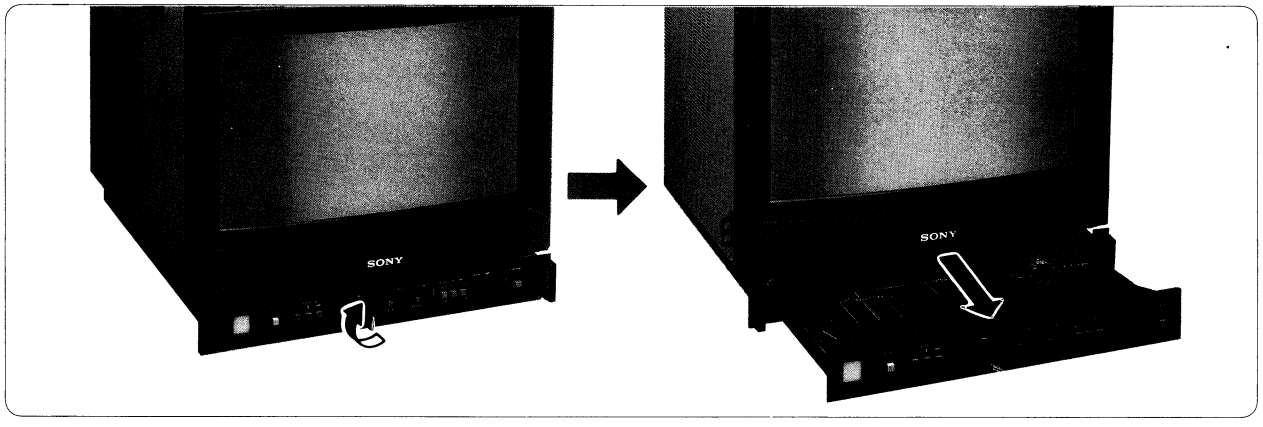
❼ AC IN socket
Connect the supplied AC power cord.

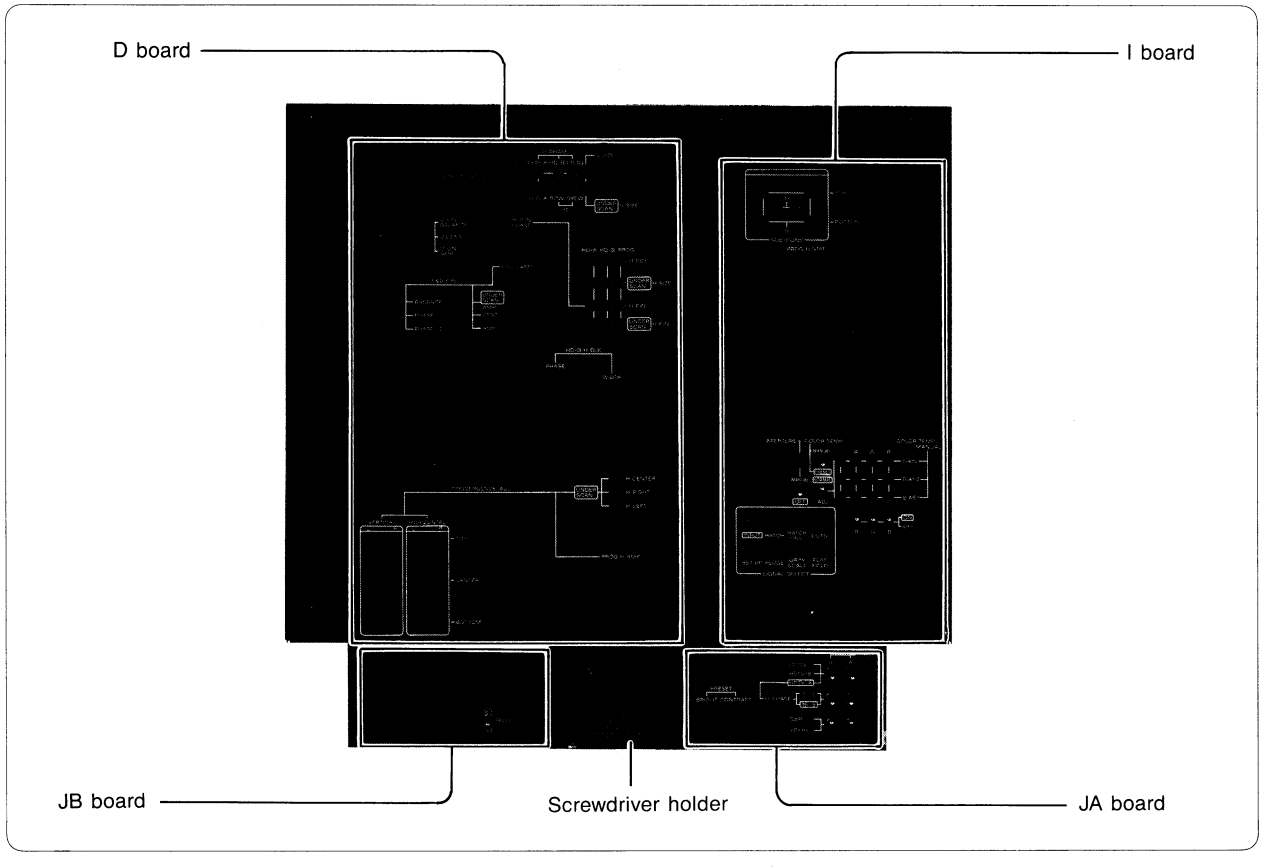
❽ Fuse holder
Use a 6.3A fuse for operation on 100 – 120V AC, or a T4A fuse for operation on 220 – 240V AC.

❾ Voltage selector
Set to the local power line voltage, 100 – 120V AC or 220 – 240V AC.

1-2-3. Sub-Control Panel

Insert the supplied key into the drawer keyhole, turn it 90° clockwise and pull the drawer out.



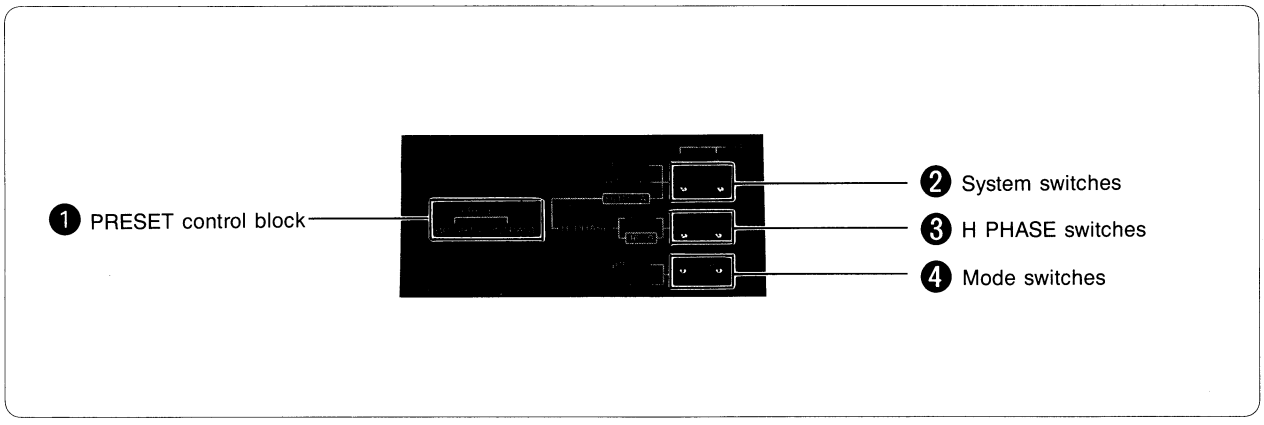


Note

To adjust the unit with the controls on the sub-control panel, wait for more than 30 minutes after the power is turned on to fully warm up the unit.

To adjust the controls, use the supplied screwdriver stored in the screwdriver holder on the sub control panel.

JA board (brightness and contrast adjustment and input mode selection)



1 PRESET control block

BRIGHT: Preset the brightness of the screen.
CONTRAST: Preset the contrast of the screen.
When the BRIGHTNESS MANUAL switch and the CONTRAST MANUAL switch on the front panel are set to OFF, brightness and contrast become the level set by the controls in the PRESET control block.

2 System switches

Set the switches to the appropriate position depending on the system of the input signals. When you change the setting of the switch, the picture size, H phase, and convergence data are changed according to the system.
The switch setting is required for each signal fed to the INPUT A or INPUT B connector.
HDTV-A: For the HDTV format input signal. If this position is selected, set the H PHASE switch 3 to the position (5:3 or 16:9) which is appropriate.
If you select the position of 5:3 and input the preceding HDVS format signal, pedestal areas (black areas) appear on the right and left of the picture.
HDTV-B: Used to change the setting (picture size, H phase, and convergence) from that of HDTV-A. (Factory-setting is the same as that of HDTV-A.)
PROG (progressive scan): For 525-line-non-interlaced signal. The aspect ratio is 4:3.

3 H PHASE switches

Set the switch to the appropriate position depending on the format of the input signal when the system switch 2 is set to HDTV-A.
16:9: For the BTA/SMPTE (new) HDTV format
5:3: For the preceding HDTV format
The switch setting is required for each signal fed to the INPUT A or INPUT B connector.

4 Mode switches

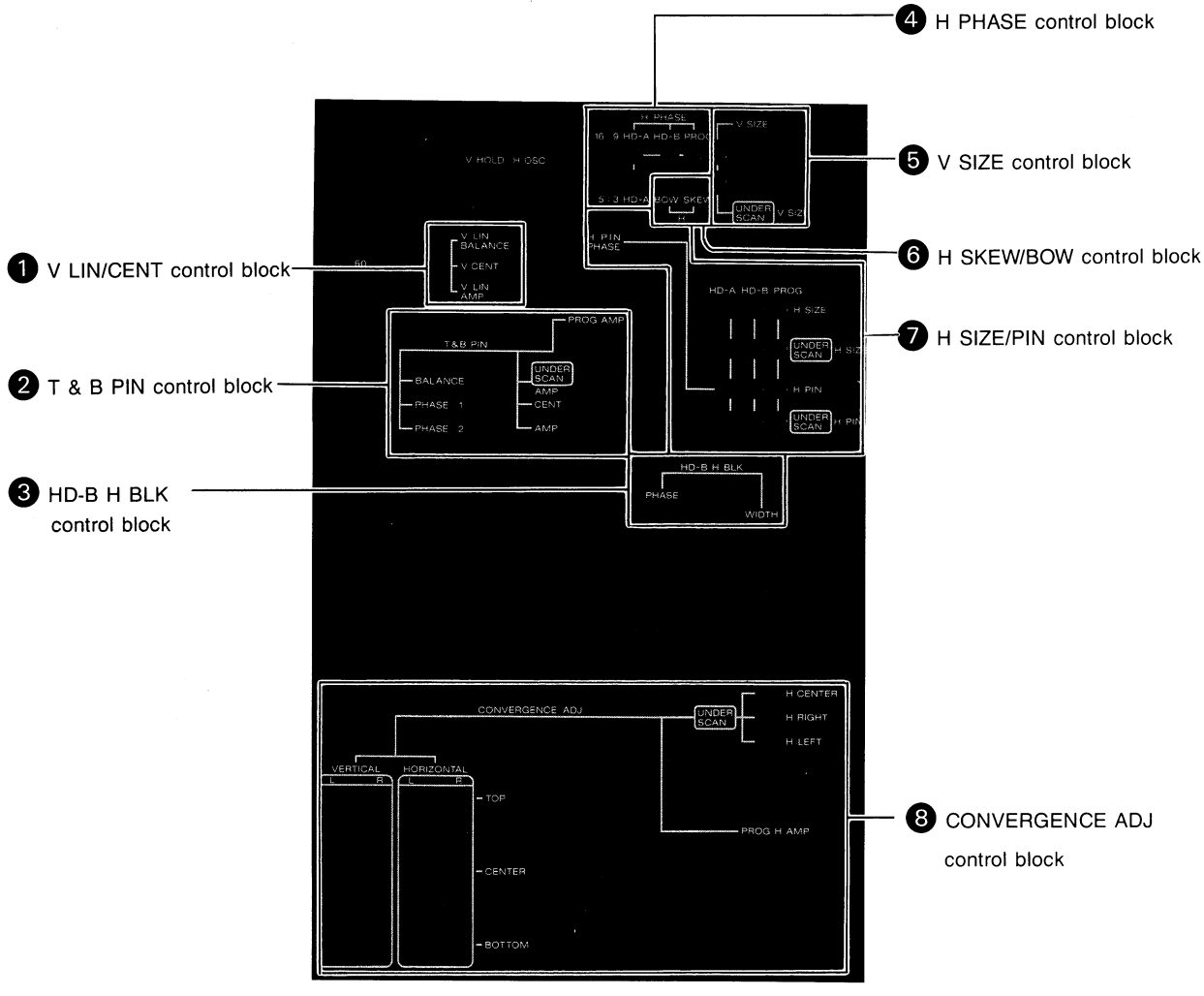
Set each switch to an appropriate position, GBR or YP_BP_R, depending on the mode of the input signals. This switch is operative only when you set the system switch 2 to HDTV-A or HDTV-B. When the switch is set to PROG, the GBR mode is selected regardless of the setting of this switch. The mode of the input signal is indicated by the GBR or YP_BP_R lamp on the front panel.

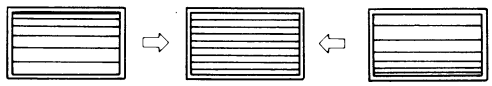
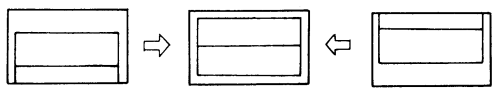
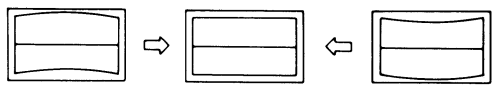
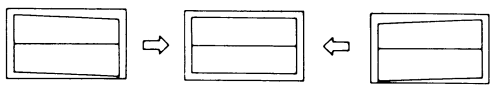
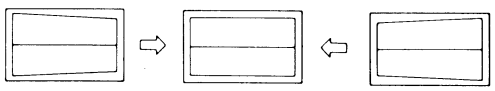
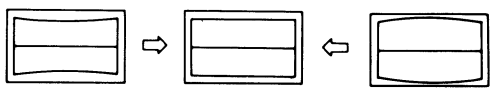
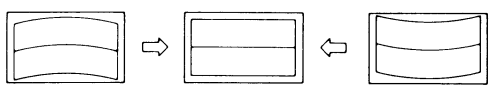
JB board

TALLY switch

By setting this switch to ON, the tally lamp on the front panel lights when the power is on. When this switch is set to OFF, the tally lamp will not light.

D board (picture distortion adjustment)



❶	**V LIN/CENT (vertical linearity/centering) control block**	
	V LIN (vertical linearity) BALANCE Used to adjust the vertical linearity balance of the picture.	
	V CENT (vertical centering) Used to adjust the vertical position of the picture.	
	V LIN (vertical linearity) AMP Used to adjust the vertical linearity of the picture.	
❷	**T & B PIN (top & bottom pincushion) control block** Used to adjust the top and bottom pincushion distortion.	
	BALANCE	
	PHASE 1	
	PHASE 2	
	AMP For the underscanned picture, adjust the amplitude with the UNDERSCAN control. For the progressive scanned picture (when the system switch on the JA board is set to PROG), adjust it with the PROG control. Adjust the UNDERSCAN AMP and PROG AMP controls after adjusting the AMP of the normal scanning.	
	CENT (centering)	 The top and bottom and the center of the screen move simultaneously.

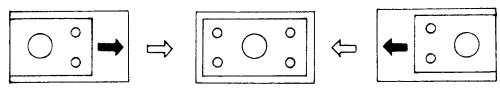
③ HD-B H BLK (horizontal blanking) control block
Used when you set the system switch to HDTV-B.

PHASE
Used to adjust the phase of the horizontal blanking.

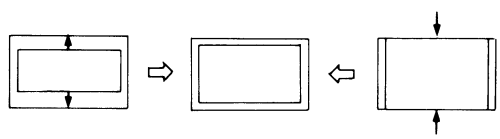
WIDTH
Used to adjust the width of the horizontal blanking.

④ H PHASE (horizontal phase) control block
Used to adjust the horizontal phase according to the system switch setting.
HD-A 5:3 (HDTV-A preceding HDTV format): When you set the system switch to HDTV-A and the H PHASE switch to 5:3.
HD-A 16:9 (HDTV-A new HDTV format): When you set the system switch to HDTV-A and the H PHASE switch to 16:9.

Note
When you are monitoring the internal test signal with the system switch set to HDTV-A, the new HDTV format is selected regardless of the H PHASE switch setting, and the HD-A 16:9 control operates but the HD-A 5:3 does not.
HD-B (HDTV-B): When you set the system switch to HDTV-B.
PROG (progressive scan): When you set the system switch to PROG.

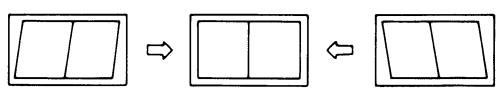


⑤ V SIZE (vertical size) control block
Used to adjust the vertical size of the picture.
For the underscanned picture, adjust the size with the UNDERSCAN control.
Adjust the UNDERSCAN control after adjusting the V SIZE control for normal scanning.

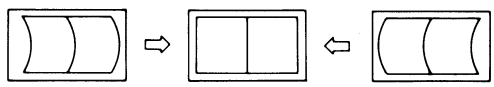


⑥ H SKEW/BOW (horizontal skew/bow) control block

H SKEW (horizontal skew)
Used to adjust the skew of the picture.

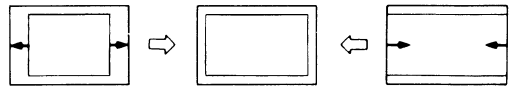


H BOW (horizontal bow)
Used to adjust the bow of the picture.

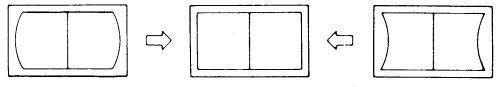


7 **H SIZE/PIN (horizontal size/pincushion) control block**

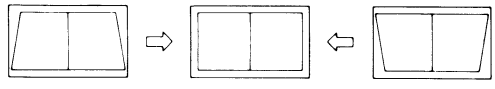
H SIZE (horizontal size)
Used to adjust the horizontal size of the picture according to the system switch setting.



H PIN (horizontal pincushion)
Used to adjust the pincushion distortion at the sides according to the system switch setting.
HD-A (HDTV-A): When you set the system switch to HDTV-A
HD-B (HDTV-B): When you set the system switch to HDTV-B
PROG (progressive scan): When you set the system switch to PROG.
For the underscanned picture, adjust the HD-A, HD-B, PROG of the UNDERSCAN controls.



H PIN PHASE (horizontal pincushion phase)
Used to adjust the pincushion distortion at the sides of the picture.



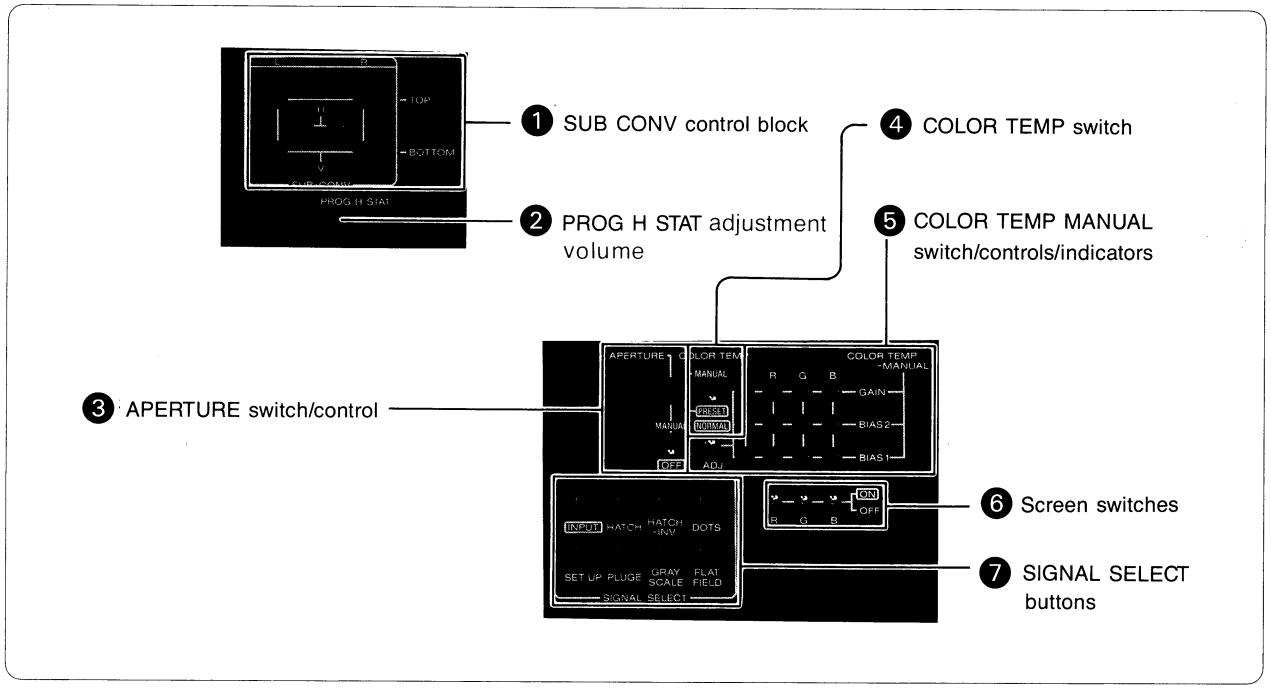
8 **CONVERGENCE ADJ (convergence adjustment) control block**
Used to adjust the convergence. (See "1-5-2. Adjusting convergence".)

VERTICAL: Vertical convergence
HORIZONTAL: Horizontal convergence

For the underscanned picture, adjust the UNDERSCAN controls.
H CENTER: convergence at the center of the picture
H RIGHT: convergence at the right side of the picture
H LEFT: convergence at the left side of the picture

For the progressive scanning (when you set the system switch to PROG), adjust the PROG H AMP (progressive horizontal scanning) control.

I board (color temperature, convergence adjustment, monitoring of the internal test signal)



❶ **SUB CONV (sub convergence) control block**
Used to adjust the convergence which cannot be adjusted with the CONVERGENCE ADJ control block on the D board. (See "1-5-2. Adjusting convergence".)

❷ **PROG H STAT (progressive scan horizontal static convergence) adjustment volume**
Used to adjust the horizontal static convergence when the system switch is set to PROG. (See "1-5-2. Adjusting convergence".)

❸ **APERTURE switch/control**
When this switch is set to OFF, a flat frequency response is obtained. For contour compensation of the picture, set the switch to MANUAL and turn the control. (The APERTURE switch and control are effective in either RGB or YPBPR mode.)

❹ **COLOR TEMP (color temperature) switch**
PRESET: The factory preset color temperature (6500K) is obtained. (To change the preset value, see Section 4.)
MANUAL: The color temperature can be adjusted with this switch and the COLOR TEMP MANUAL control ❺. The factory preset value is 6500K.

❺ COLOR TEMP MANUAL (color temperature manual) switch/controls/indicators
Used to adjust the color temperature. (See "1-5-1. Adjusting color temperature".) The indicator lights to show the controls to be adjusted at this time.

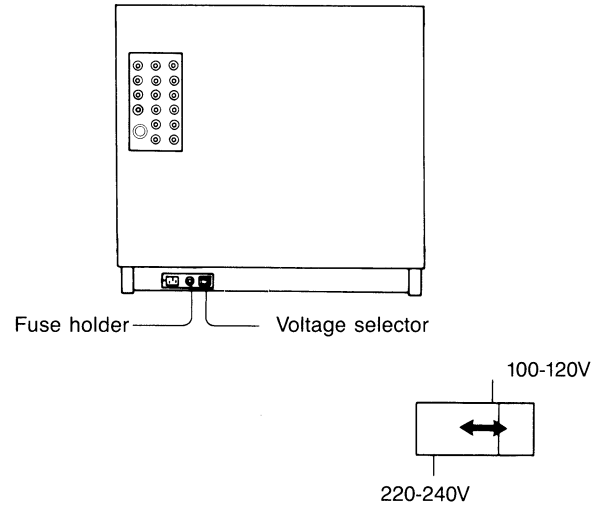
❻ Screen switches
The R, G and B switches turn the red, green an blue beams on and off respectively.

❼ SIGNAL SELECT buttons
INPUT button: The signal fed to the INPUT A or INPUT B connector on the rear panel is displayed on the screen. Select the input signal with the INPUT selector on the front panel.
Test signal buttons : The test signal generated by the built-in signal generator is displayed on the screen. Seven types of test signals, HATCH, HATCH INV, DOTS, SET UP, PLUGE, GRAY SCALE, FLAT FIELD are generated. (See "1-5-3. Checking the unit with the internal test signal".)

1-3. Connection and Preparation at Installation

1-3-1. Selecting the Operating Voltage

The HDM-1730/1730E can operate on either 100-120 or 220-240V AC by selecting the operating voltage with the voltage selector. Before plugging in the unit, make sure that the voltage selector is set to the local power line voltage. Change the setting of the voltage selector, if necessary. When you change the setting, be sure to remove the AC power cord from the AC power source.



NOTICE
THIS NOTICE IS APPLICABLE FOR USA AND CANADA ONLY.
If shipped to USA, use the UL LISTED power cord specified below for 220-240 V operation.
If shipped to CANADA, use the CSA CERTIFIED power cord specified below for 220-240 V operation.

DO NOT USE ANY OTHER POWER CORD

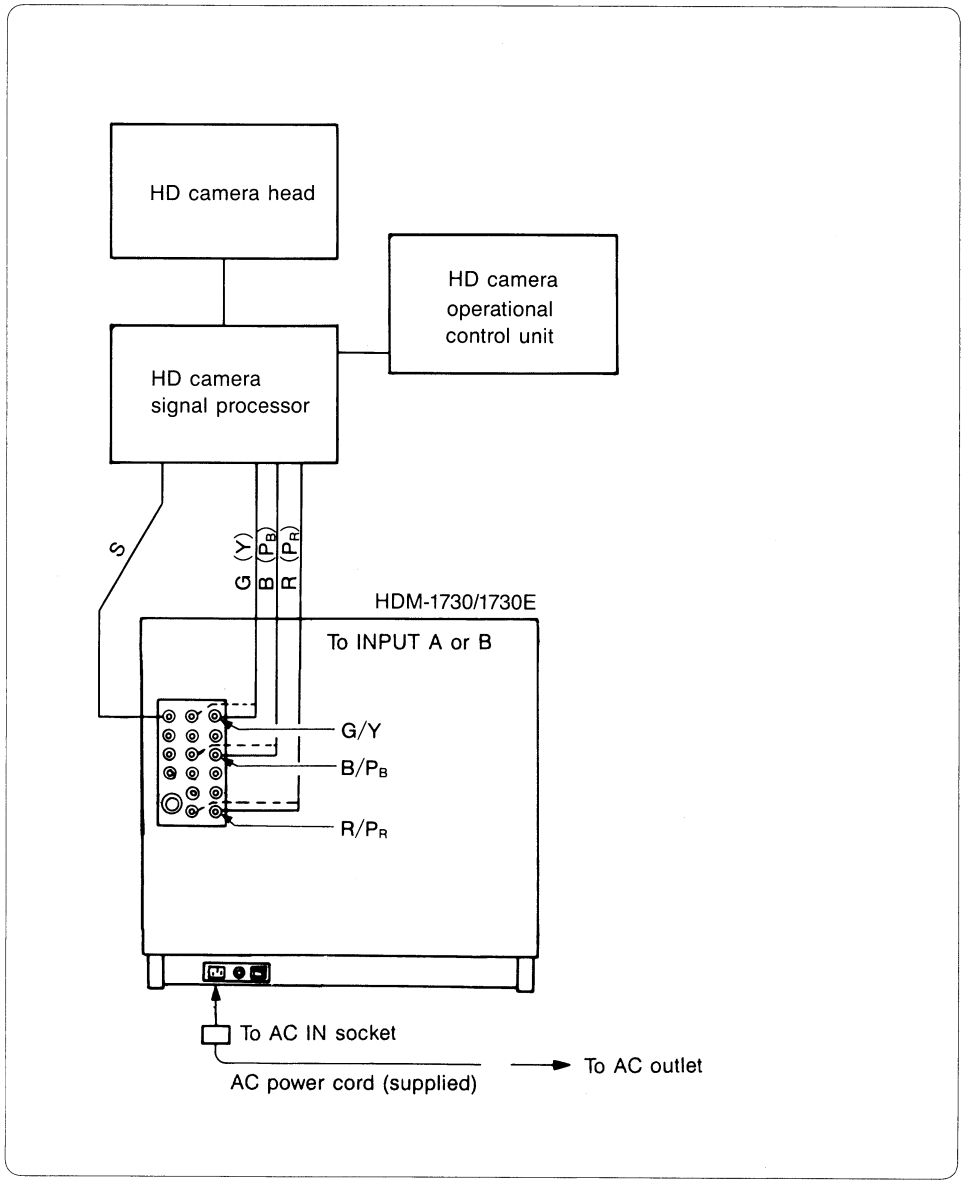
Plug Cap	Tandem blade with ground pin. (NEMA 6-15P Configuration)
Cord	Type SVT or SJT, three 16 or 18 AWG Wires.
Length	Maximum 15 feet
Rating	Minimum 10A, 250V

Changing the fuse

The fuse initially installed is as follows:
- 6.3A/125V fuse for 100-120V AC
- T4A/250V fuse for 220-250V AC

If you change the setting of the voltage selector, be sure to replace the fuse with the appropriate one.

1-3-2. Connection Example



1-4. Setting Switches according to the Input Signals

You can monitor the input signals fed to either the INPUT A or INPUT B connectors. Select which one to monitor with the INPUT selector on the front panel. According to the format of the input signals, set the switches on the JA board as follows.

Switch settings for input signal A

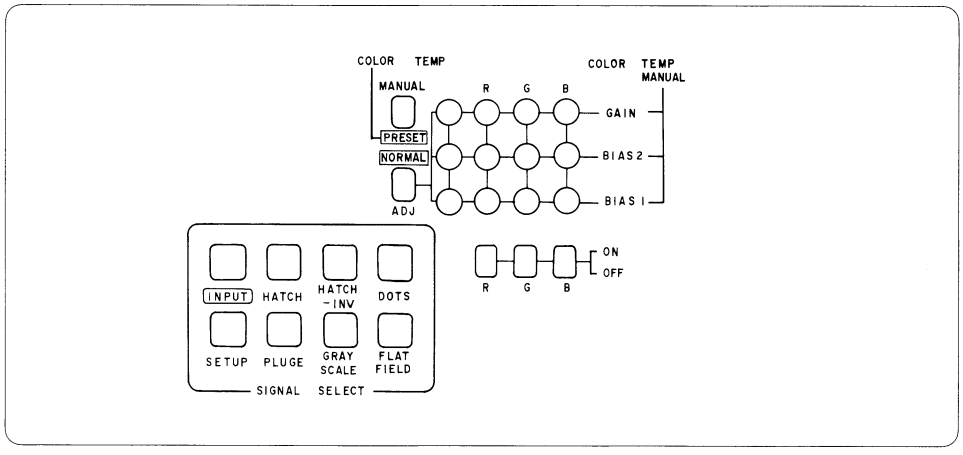
Signal format	Front panel	JA board (page 1-9)		
	INPUT selector	System switch (for INPUT A)	H PHASE switch (for INPUT A)	Mode switch (for INPUT A)
BTA/SMPTE standard HDTV signal (GBR)	A	HDTV-A	16:9	GBR
BTA/SMPTE standard HDTV signal ($Y/P_B/P_R$)				$Y/P_B/P_R$
Preceding format HDTV signal (GBR)			5:3	—
BTA/SMPTE standard HDTV signal (GBR)		HDTV-B	—	GBR
BTA/SMPTE standard HDTV signal ($Y/P_B/P_R$)				$Y/P_B/P_R$
525 lines non-interlaced signal (GBR)		PROG	—	—

Do the same for input B signal using the switches for input B signal.

1-5. Adjustment

1-5-1. Adjusting Color Temperature

Adjust the color temperature using the COLOR TEMP MANUAL switch and controls on the I board.



- Allow the unit for more than 30 minutes to start adjusting the color temperature after you turn the unit.
- Adjust the color temperature with the contrast and brightness set to their preset levels.
- It is recommended that the BRIGHT and CONTRAST controls in the PRESET control block on the JA board are set to the mechanical center position.
- After adjustment, set the ADJ switch to NORMAL. If the switch remains at ADJ, the BRIGHTNESS MANUAL control and the beam detection circuit do not function.
- Use a color analyzer for more precise adjustment.
- The color temperature is set to 6500K at factory.

1 Set the COLOR TEMP switch to MANUAL.

2 Set the ADJ switch to ADJ.

3 Press the SET UP button of the SIGNAL SELECT buttons.

4 Adjust the black level at the center on the screen by the BIAS 1 controls. Recommended brightness is about 0.5 nit.

5 Press the FLAT FIELD button of the SIGNAL SELECT buttons.

6 Adjust the white level at the center on the screen by the GAIN controls. Recommended brightness is about 120 nit.

7 Set the ADJ switch to NORMAL.

8 Press the SET UP button of the SIGNAL SELECT buttons.

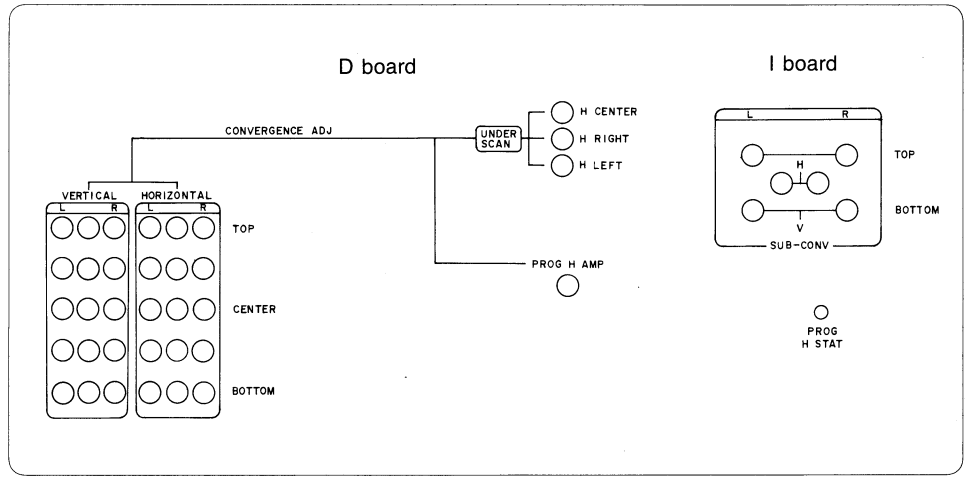
9 Precisely adjust the black level at the center on the screen with the BIAS 2 controls. Recommended brightness is about 0.5 nit.

10 Press the FLAT FIELD button of the SIGNAL SELECT buttons, and check the white balance. If the white balance has not been adjusted, readjust it by repeating steps 5 through 10.

Color temperature can be adjusted using the received picture. In this case, press the INPUT button of the SIGNAL SELECT buttons. The operations in steps 3, 5, 8 and 10 are not required.

1-5-2. Adjusting Convergence

Adjust the convergence using the CONVERGENCE ADJ control block on the D board and the SUB CONV control block on the I board.



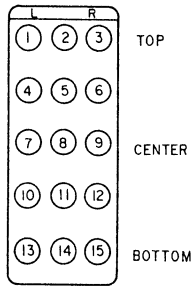
- The HORIZONTAL/H control adjusts the horizontal convergence, and the VERTICAL/V control does the vertical one.
- Red and blue function symmetrically against green.

Adjusting the convergence

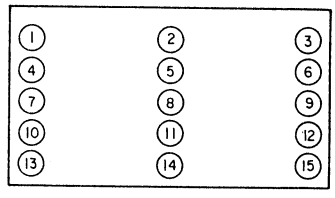
- Input the crosshatch signal, and set the unit in the HDTV-A or B system.
- Release all the SCAN MODE switches on the front panel.
- Press the CONTRAST MANUAL switch and BRIGHTNESS MANUAL switch on the front panel to make the lamps lit, and turn the control to get a clear picture.
- Set the SUB CONV control to the mechanical center position.

1 Adjust the convergence using the HORIZONTAL and VERTICAL controls in the CONVERGENCE ADJ control block. Each control corresponds to the position on the screen as follows:

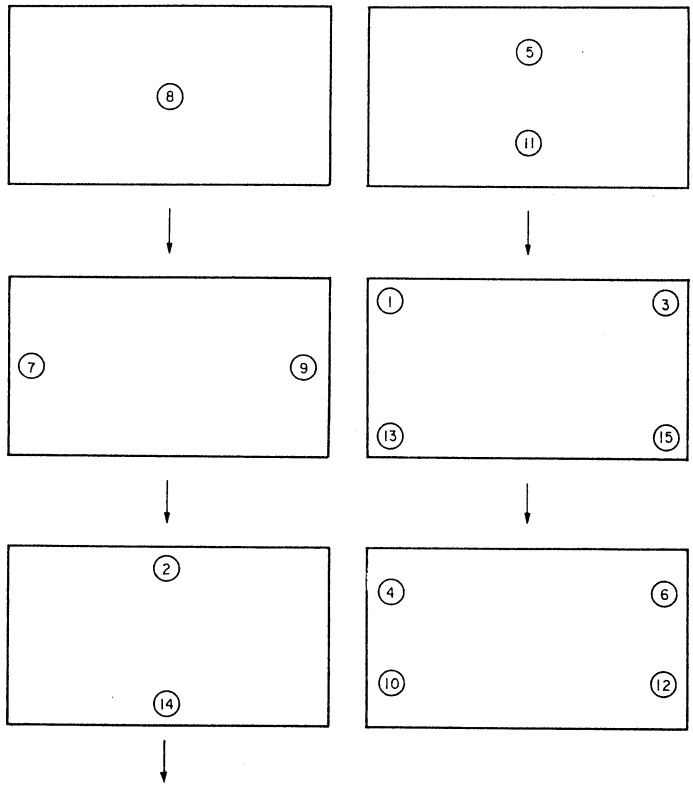
CONVERGENCE ADJ control block



Screen

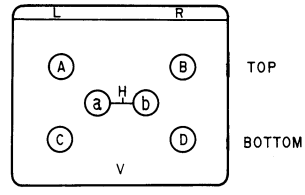


Execute the adjustment in the following order.

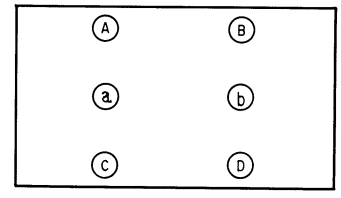


2 Adjust the convergence with the controls in the SUB CONV control block. Adjust the following part which cannot be adjusted with the controls in the CONVERGENCE ADJ control block.

SUB CONV control block



Screen



ⓐ and ⓑ adjust the horizontal convergence only, and Ⓐ through Ⓓ adjust the vertically convergence only.

Adjusting the convergence in underscan mode

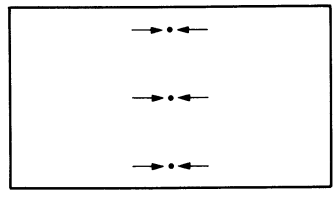
When the convergence is adjusted in normal scan mode, horizontal convergence of an underscaned picture is shifted. Adjust it as follows:

1 Check that the convergence in normal scan mode of HDTV-A or B system.

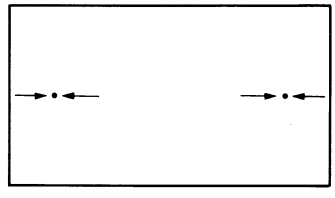
2 Depress the SCAN MODE ⊡ switch to set the unit in underscan mode.

3 Adjust the convergence with the UNDERSCAN controls.

i) Adjust the convergence of the vertical line at the center of the screen using the H CENTER control.



ii) Adjust the convergence at the center of both sides of the screen using the H RIGHT and H LEFT controls.



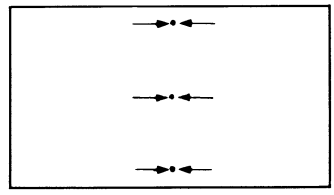
Adjusting the convergence in progressive scan mode

When the convergence is adjusted in normal scan mode of the HDTV-A or B system, horizontal convergence is shifted in a progressive scan mode picture. Adjust it as follows:

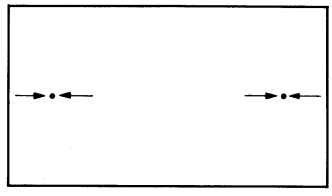
1 Check that convergence is adjusted in normal scan mode of the HDTV-A or B system.

2 Set the system switch to PROG.

3 Adjust the convergence of the vertical line at the center of the screen using the PROG H STAT control on the I board.



4 Adjust the convergence at the center of both sides of the screen using the PROG H AMP control on the D board. Both sides move simultaneously.

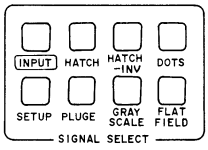


When the monitor is used mainly in progressive scan mode, adjust the convergence in normal scan mode (refer to pages 1-21 and 1-22) again after adjustments as above. Then more precise convergence adjustment in progressive mode can be obtained. In this case, convergence in a normal scan or underscan mode of the HDTV-A or B system may be shifted, but it is not a failure in the adjustment.

1-5-3. Checking the Unit with the Internal Test Signal

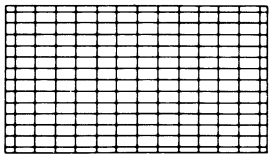
The status of this unit can be checked by monitoring the seven kinds of test signals generated by the built-in signal generator. Test signals are selected by the SIGNAL SELECT buttons on the I board.

I board

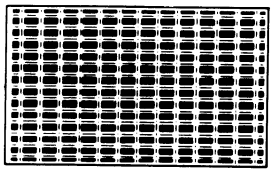


INPUT

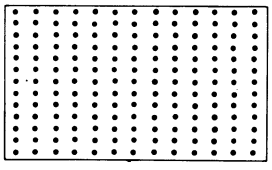
HATCH



HATCH INV.

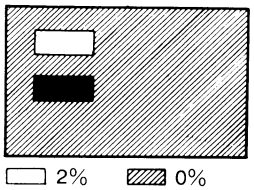


DOTS

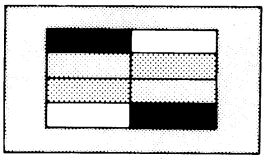


SET UP * (0% Black)

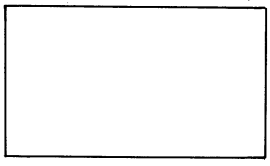
PLUGE * *



GRAY SCALE



FLAT FIELD (100% white)

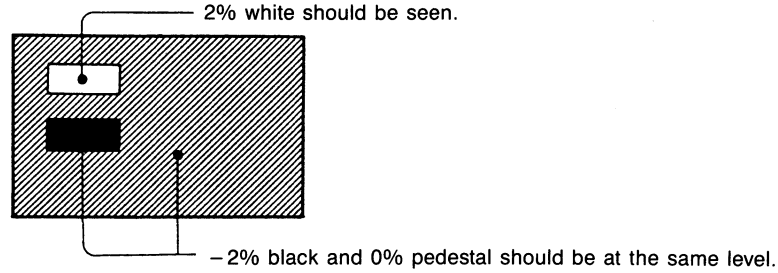


* Convergence at the part shown by a horizontal line above the gray belt in the center of the screen may be shifted, but it is not a failure of the monitor.

* * PLUGE= Picture Line Up Generating Equipment

Adjusting the brightness using the PLUGE signal

To adjust the brightness with the BRIGHTNESS MANUAL control on the front panel depending on the ambient light, use the PLUGE signal and adjust as follows.



1-6. Specifications

	System	1125 lines, 60 fields/sec., interlaced 1 HDTV studio standard (BTA S-001/SMPTE 240M standard) 2 Preceding HDTV standard (only the RGB input) 525 lines, 59.94 frames/sec., non-interlaced
	CRT	Super Fine Pitch Trinitron 0.31 mm phosphor trio pitch, 90° deflection, 36.5 ϕ in-line gun Effective picture size: 216.6 × 385 mm (h/w) (8 5/8 × 15 1/4 inches) 441.7 mm (17 1/2 inches) measured diagonally

Input connectors and signals

Connectors

	G/Y, B/P_B, R/P_R	BNC (2), 75 ohms or high impedance (with loop-through output)
	EXT SYNC	BNC (1), 75 ohms or high impedance (with loop-through output)
	HD, VD	BNC (1), 75 ohms
	Remote control	10-pin

Video signals

	HDTV	GBR: Composite, 1.0 Vp-p or non-composite, 0.7 Vp-p Sync signal is ±0.3 Vp-p ±6 dB tri-level bipolar sync or 0.3V ±6 dB sync, negative. Y/P_B/P_R: Composite, 1.0 Vp-p or non-composite, 0.7 Vp-p P_B and P_R is ±0.35 Vp-p, and the sync signal is ±0.3V ±6 dB tri-level bipolar sync.
	525 lines, non-interlaced	R/G/B: Composite, 1.0 Vp-p or non-composite, 0.7 Vp-p Sync signal is 0.3V ±6 dB sync, negative.

Sync signal

	EXT SYNC	±0.3V±6 dB tri-level bipolar sync or 0.3V±6 dB sync, negative
	HD, VD	4 Vp-p±6 dB sync, negative

Video signal

Frequency response	60 Hz to 30 MHz $^{+0.5}_{-3}$ dB (from video input to RGB final stage when the APERTURE is OFF)
Waveform distortion	Overshoot: Less than 10% (at RGB final stage when a square wave (rise time: 0.01 μsec.) is input) Sag: Less than 2%
Linearity	DG: Less than 5% (from video input to RGB final stage)
DC restoration	Clamp voltage regulation: Less than 1% of input video signal, 10% to 90% APL
Noise	Less than −55 dB (p-p/p-p) (RGB final stage, with video input terminated with 75-ohm)
Matrix error ($Y/P_B/P_R$)	Within 3%

Deflection and high voltage

Minimum sync level	Internal sync: −10 dB External sync: −10 dB
Deflection distortion	Within a central area bounded by a circle whose diameter equals the picture height, within 1% of the picture height (only in the HDTV system)
Picture size	Normal scan: 5% overscan Underscan: 3% underscan
Interlace	Within 55:45 (only in the HDTV system)
Retrace time	Horizontal: Less than 3.77 μsec. Vertical: Less than 650 μsec.
Anode voltage	27 ± 0.2 kV
EHT load regulation	Less than 1%
Convergence	Center: Less than 0.4 mm Corners: Less than 0.7 mm (only in normal scan mode of HDTV)
Luminance	35 Ft-L (When 100% white is input at the preset level)
Color temperature	

Mode	Color temperature
PRESET	6500K + 8MPCD
MANUAL	6500K + 8MPCD

Nominal chromaticity coordinates

	X	Y
R	0.630	0.340
G	0.310	0.595
B	0.155	0.070

Resolution

Center
Horizontal: More than 760 TV lines
Vertical: More than 750 TV lines
Corners
Horizontal: More than 700 TV lines
Vertical: More than 700 TV lines

Environment

Operating temperature	0°C to 40°C (32°F to 104°F)
Optimum temperature range	20°C to 30°C (68°F to 86°F)
Operating humidity	10% to 85%
Storage temperature	−20°C to +60°C (−4°F to 140°F)
Altitude	Lower than approx. 3,050 m (10,000 feet)

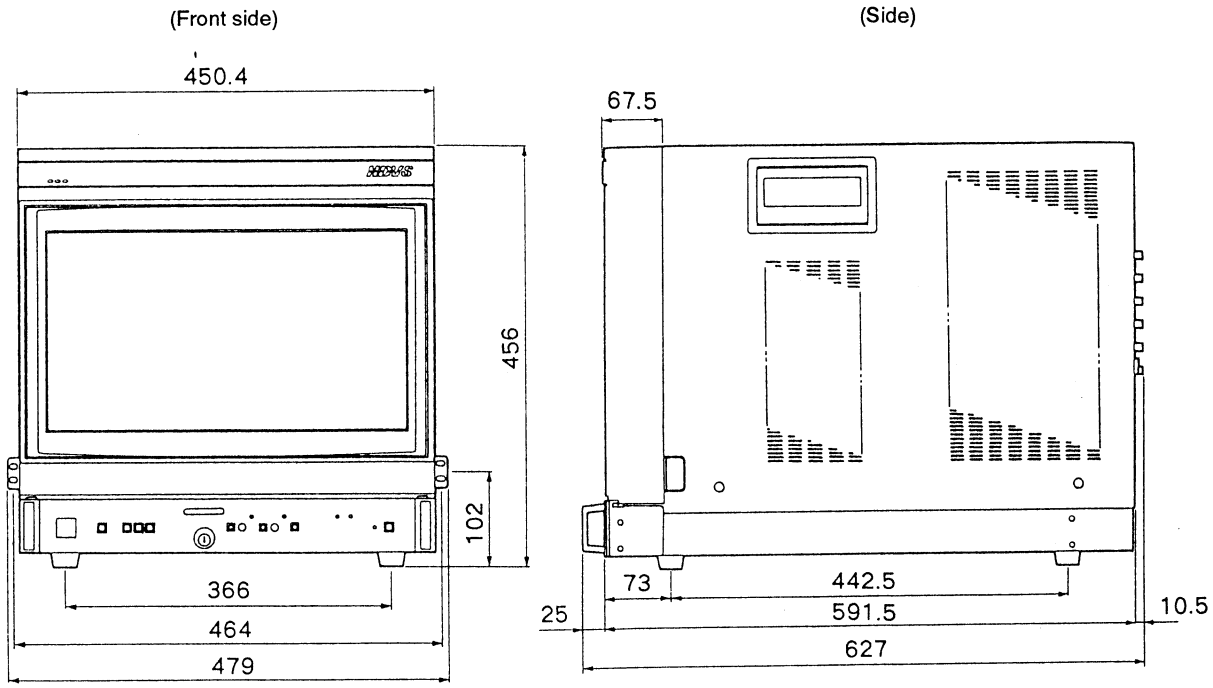
Others

Warm up time	More than 30 minutes
Power requirements	90 to 132V or 198 to 264V AC selectable, 50/60 Hz
Power consumption	230W
Weight	43.2 kg (95 lb 4 oz)
Dimensions	479 × 456 × 627 mm (w/h/d) (18 7/8 × 18 × 24 3/4 inches)
Supplied accessories	Fuse (2) (6.3A/125V or T4A/250V) Remote connector (1) Tally number plate (1) Drawer key (1) AC power cord (1) 75-ohm termination plug (4) Operation and maintenance manual (1) Screwdriver (1)
Optional accessory	SLR-101 slide rail

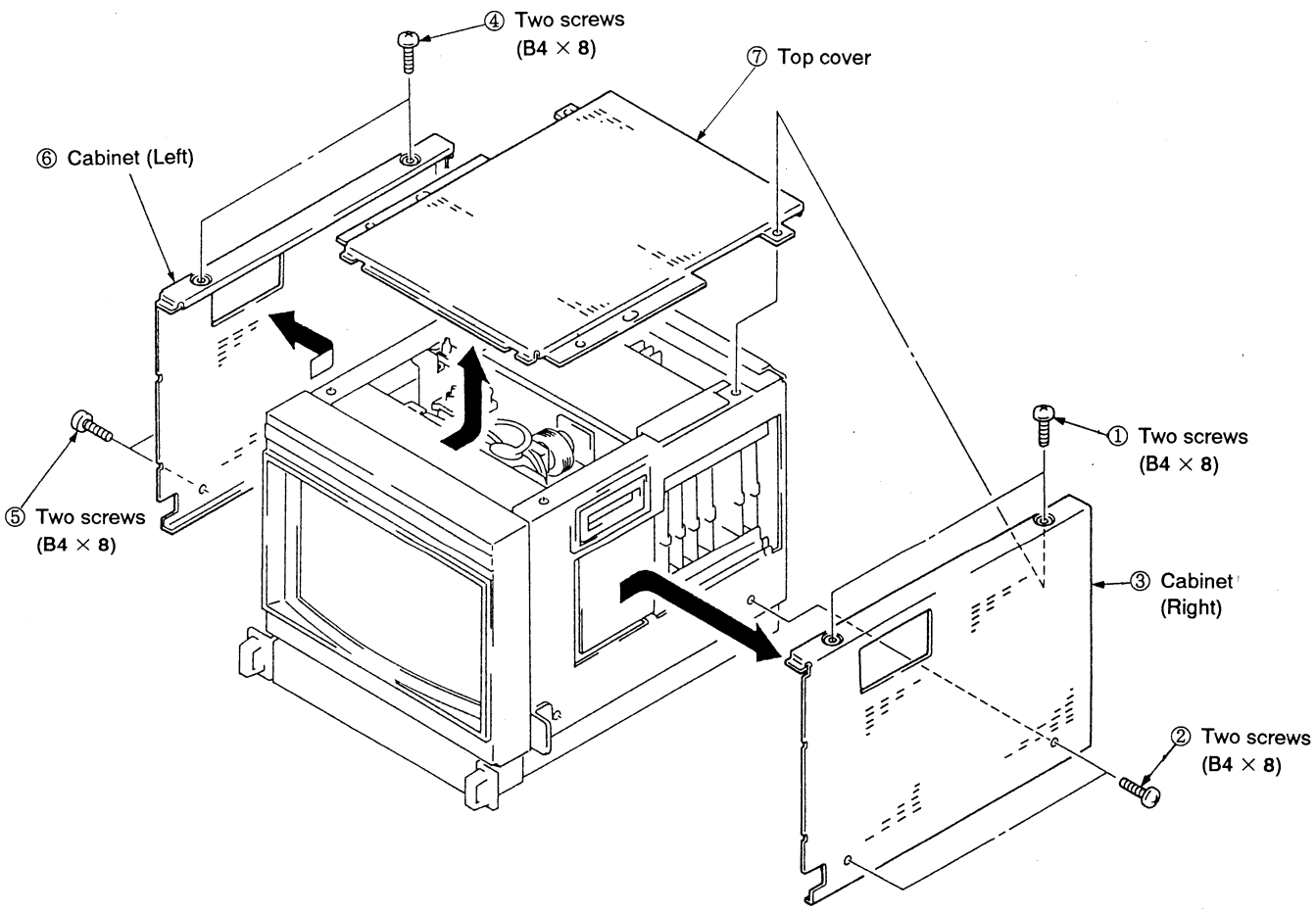
Design and specifications are subject to change without notice.

SECTION 2
EXTERNAL DIMENSIONAL DIAGRAM AND DISASSEMBLY

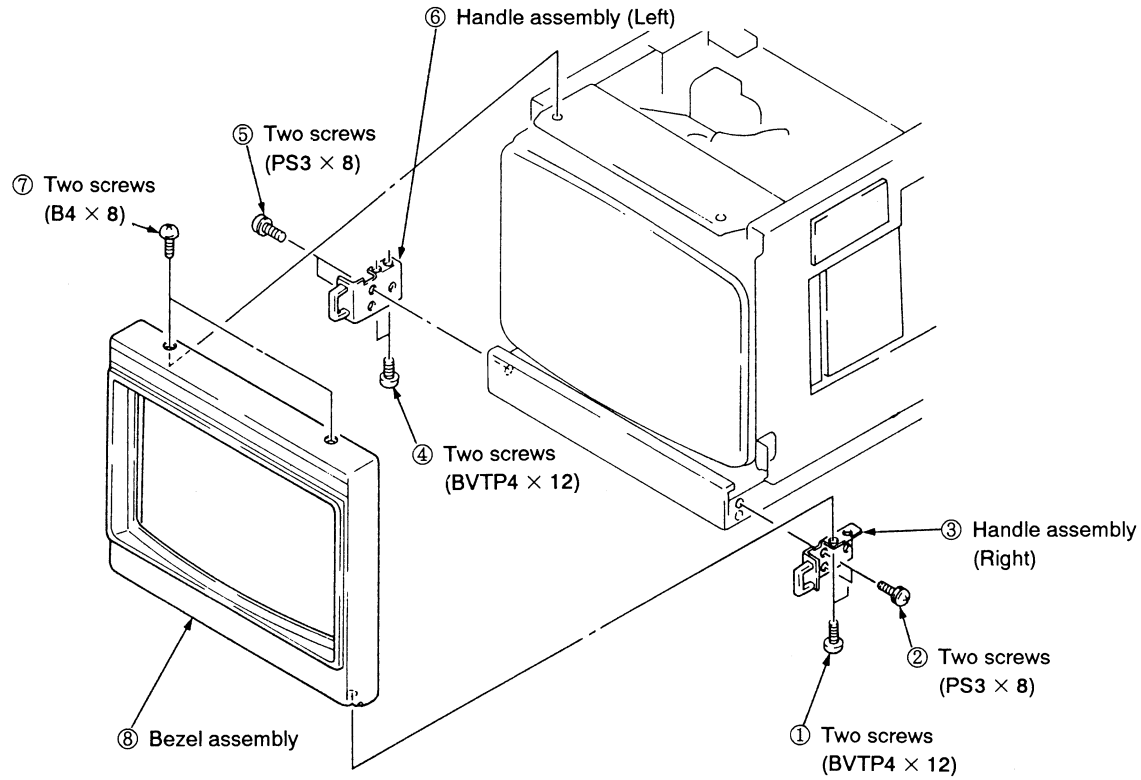
2-1. EXTERNAL DIMENSIONAL DIAGRAM



2-2. REMOVAL OF THE CABINET

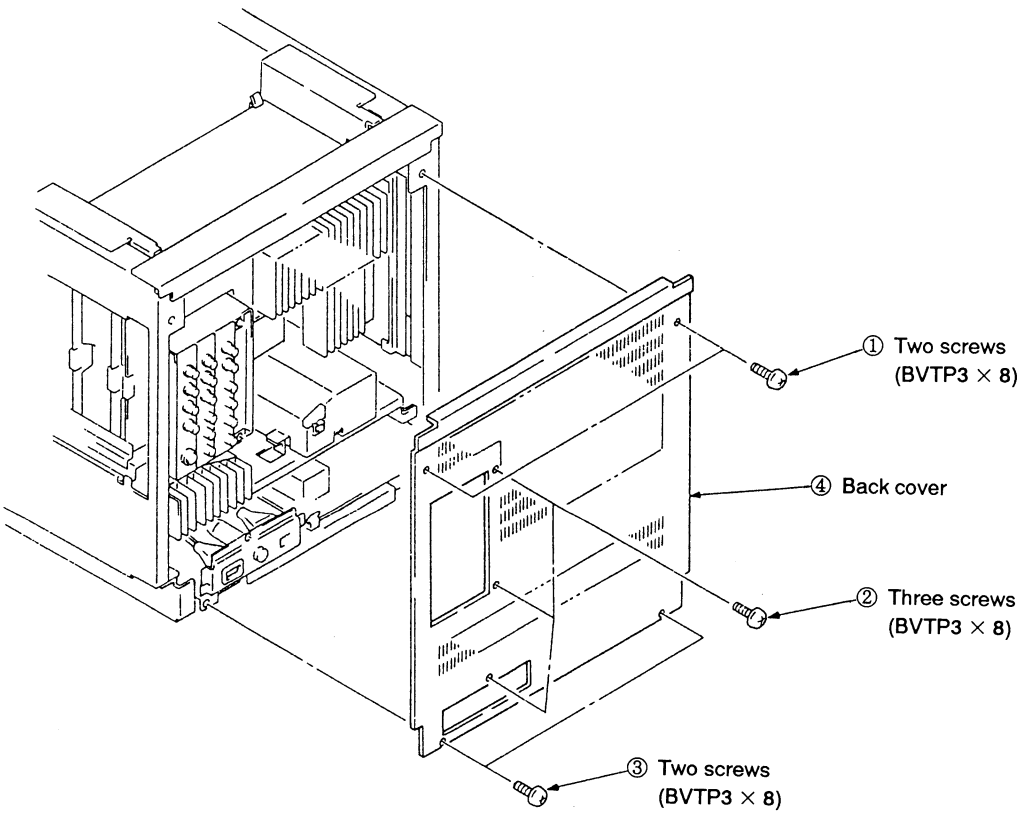


2-3. REMOVAL OF THE BEZEL ASSEMBLY

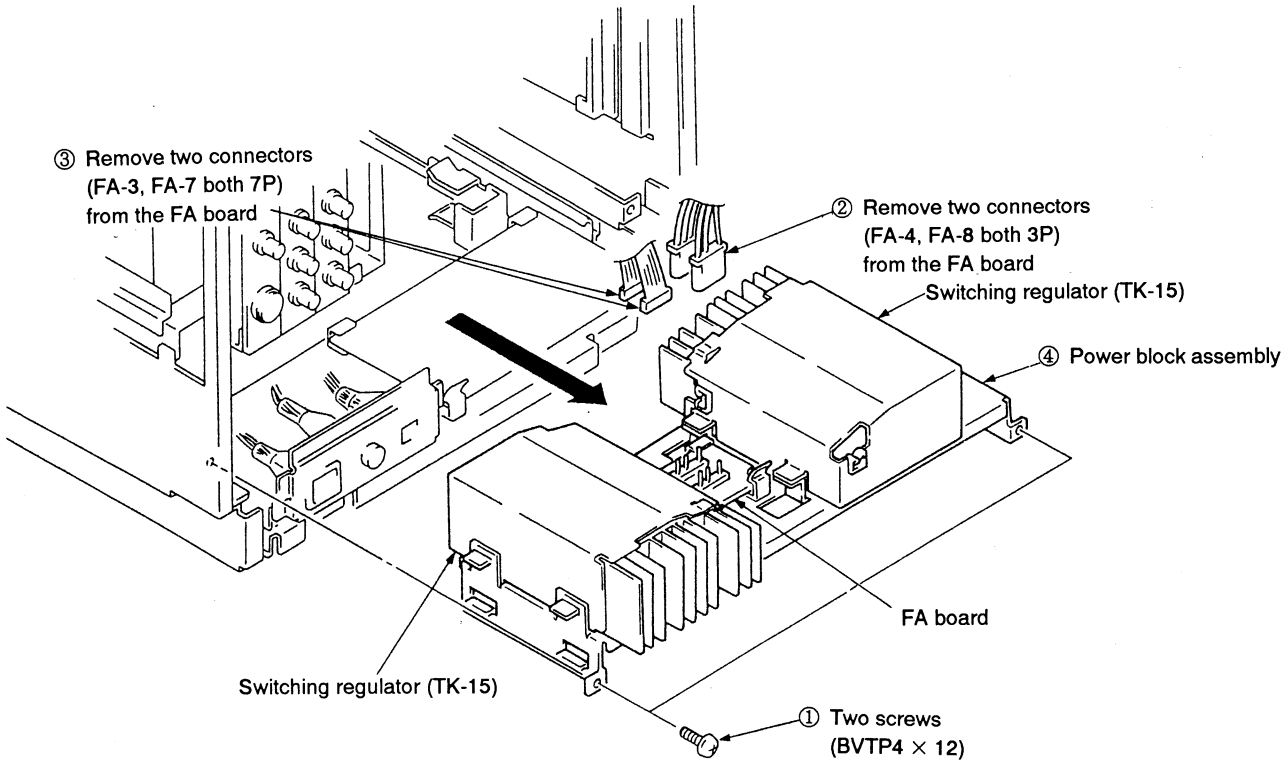


2-4. REMOVAL OF THE BACK COVER

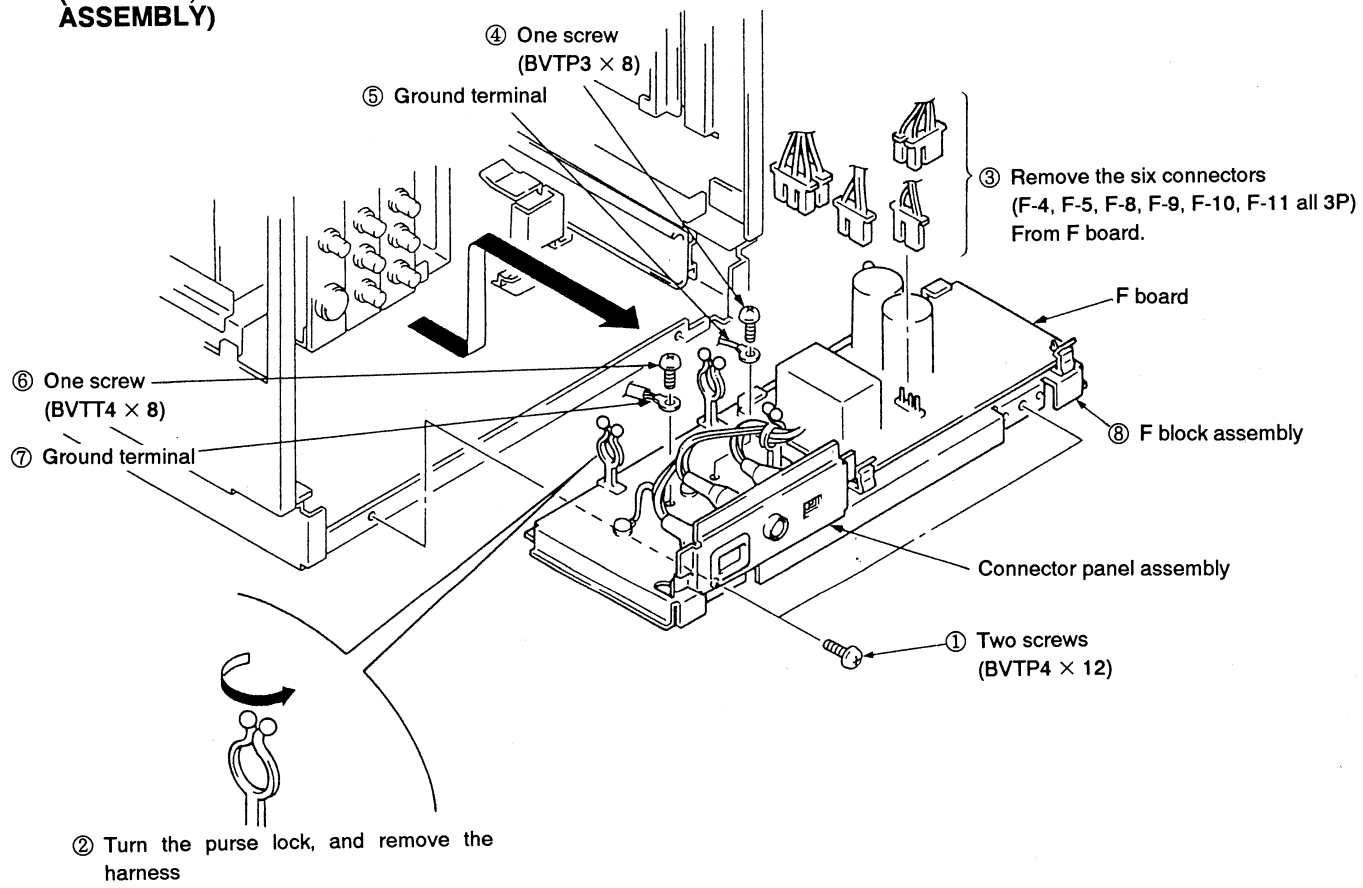
Note: Do it after removing cabinet (Right, Left) and top cover.
(Refer to 2-2. REMOVAL OF THE CABINET)



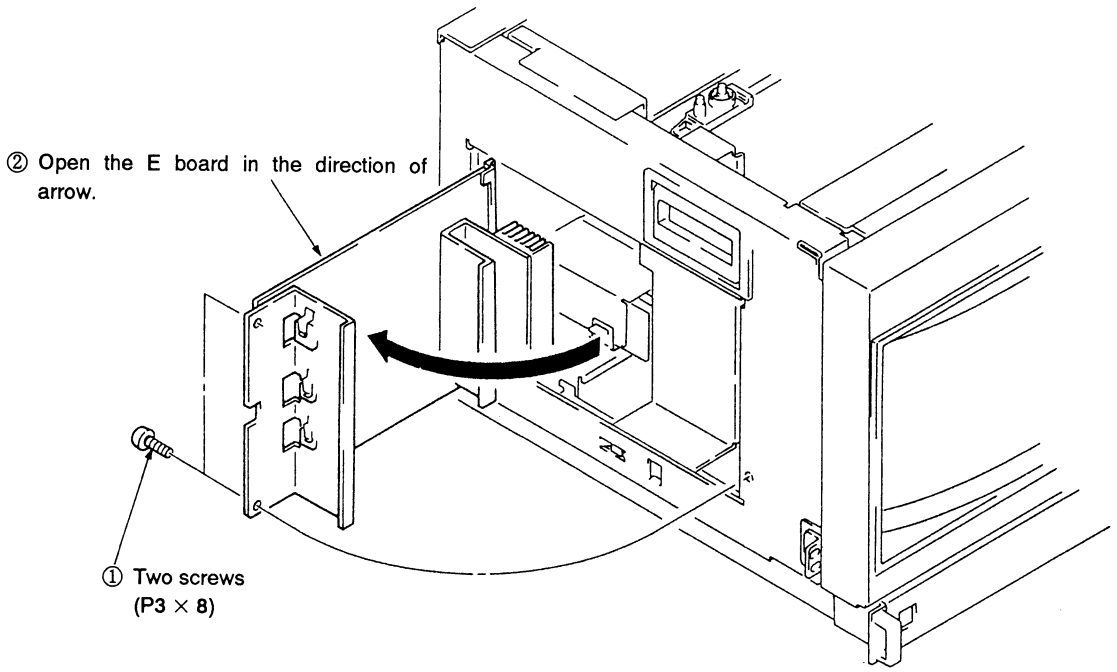
2-5. REMOVAL OF THE POWER BLOCK ASSEMBLY (SWITCHING REGULATOR, FA BOARD)



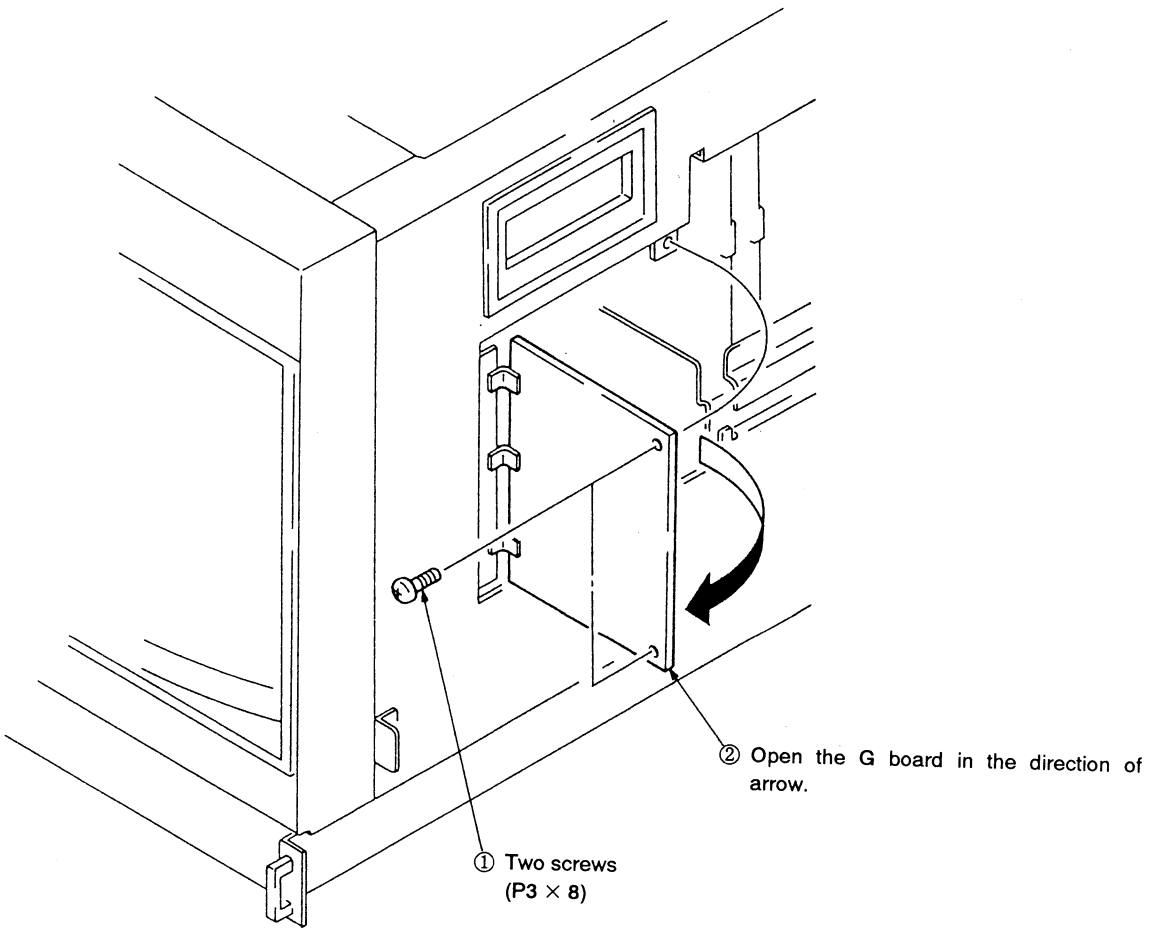
2-6. REMOVAL OF THE F BLOCK ASSEMBLY (F BOARD, CONNECTOR PANEL ASSEMBLY)



2-7. INSPECTION METHOD OF THE E BOARD

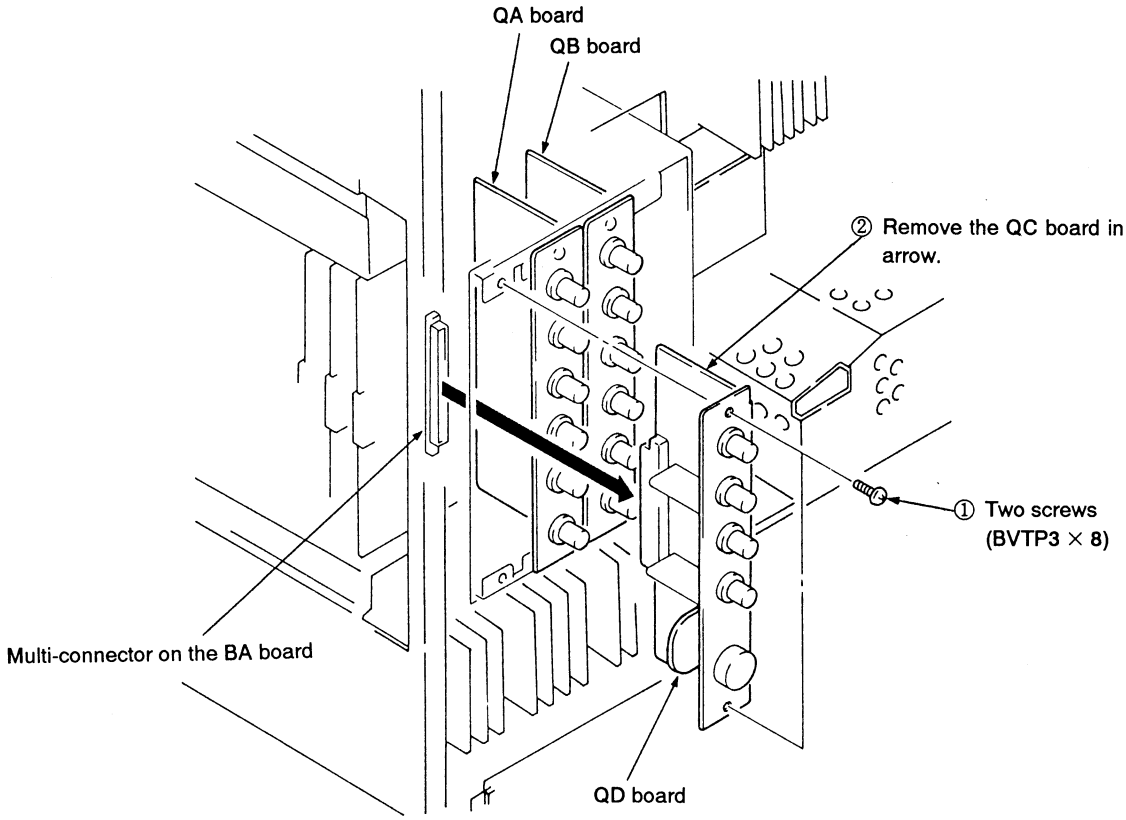


2-8. INSPECTION METHOD OF THE G BOARD

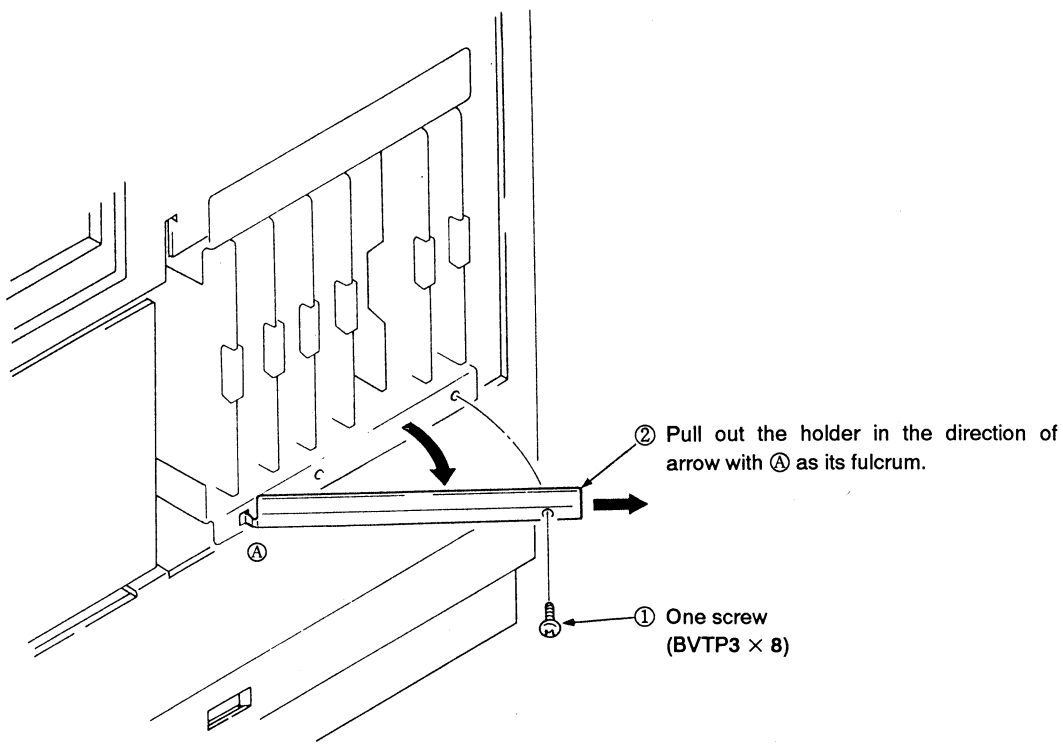


2-9. REMOVAL OF THE QC BOARD

Note: QA and QB boards can be removed simiLarly.



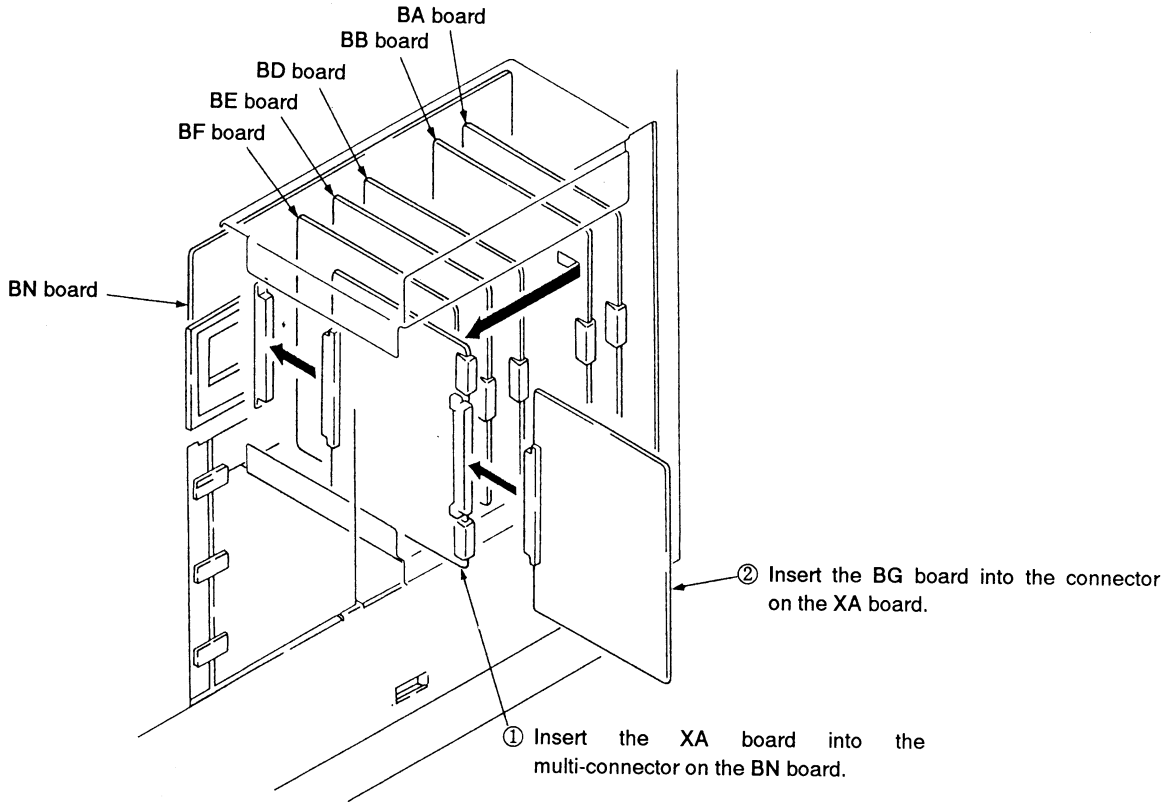
2-10. REMOVAL OF THE HOLDER



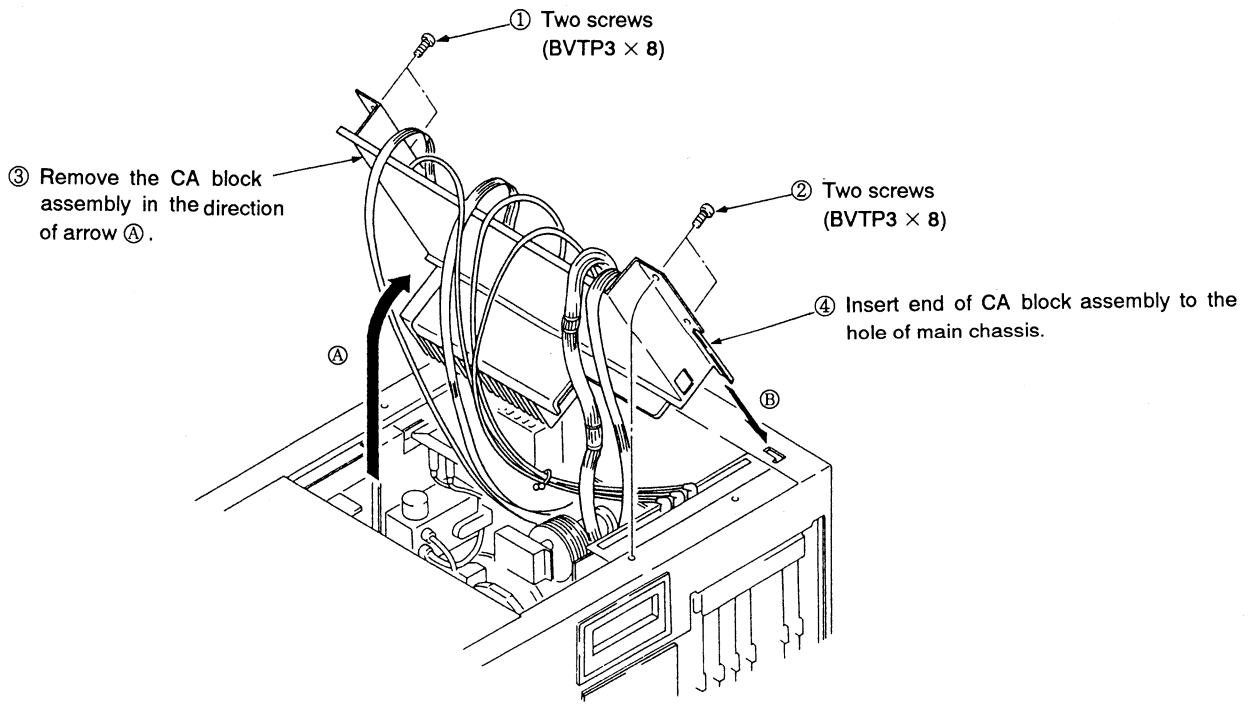
2-11. INSPECTION METHOD OF THE BG BOARD

Note: BA, BB, BD, BE and BF boards can similarly be inspected.

Note: When inspecting the BA board, remove the QA, QB, QC boards from BA board first.
(Refer to 2-9. REMOVAL OF QC BOARD.)

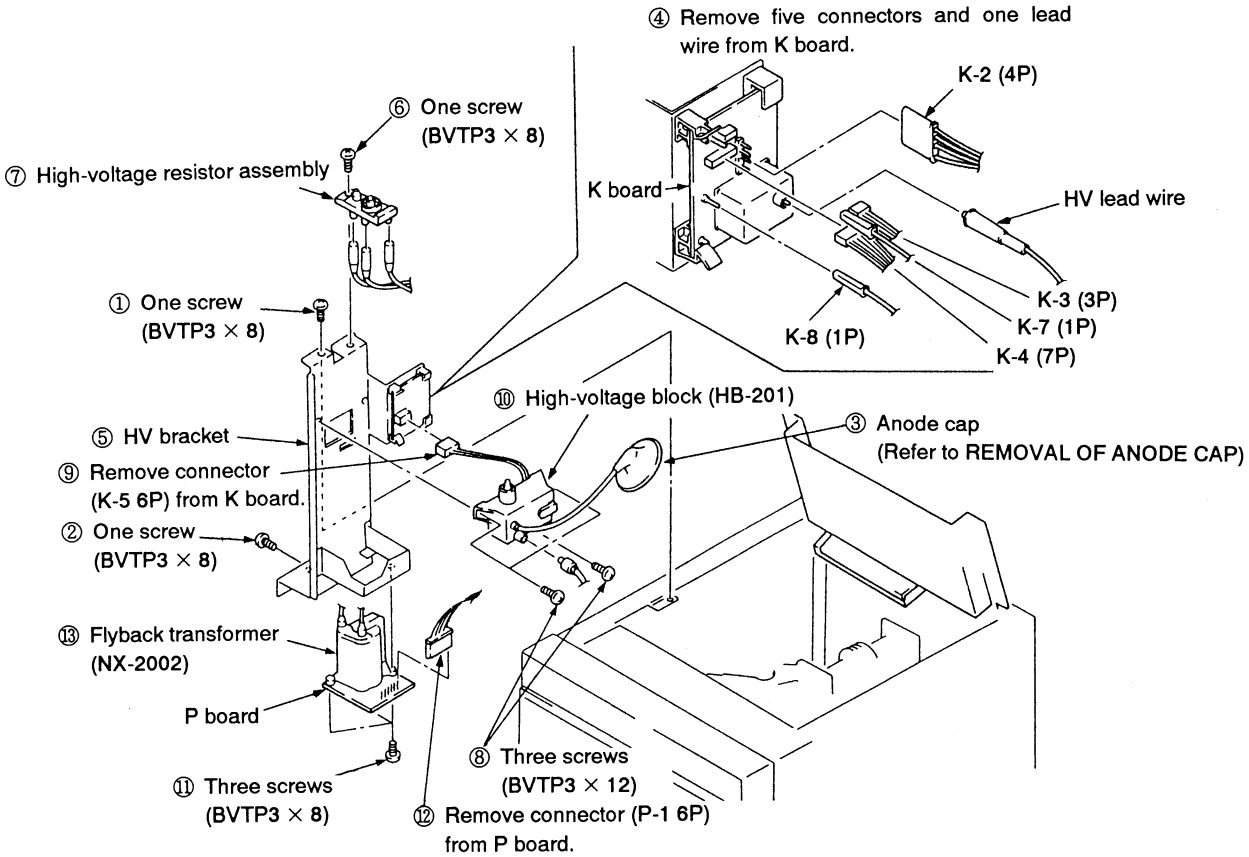


2-12. REMOVAL OF THE CA BLOCK ASSEMBLY

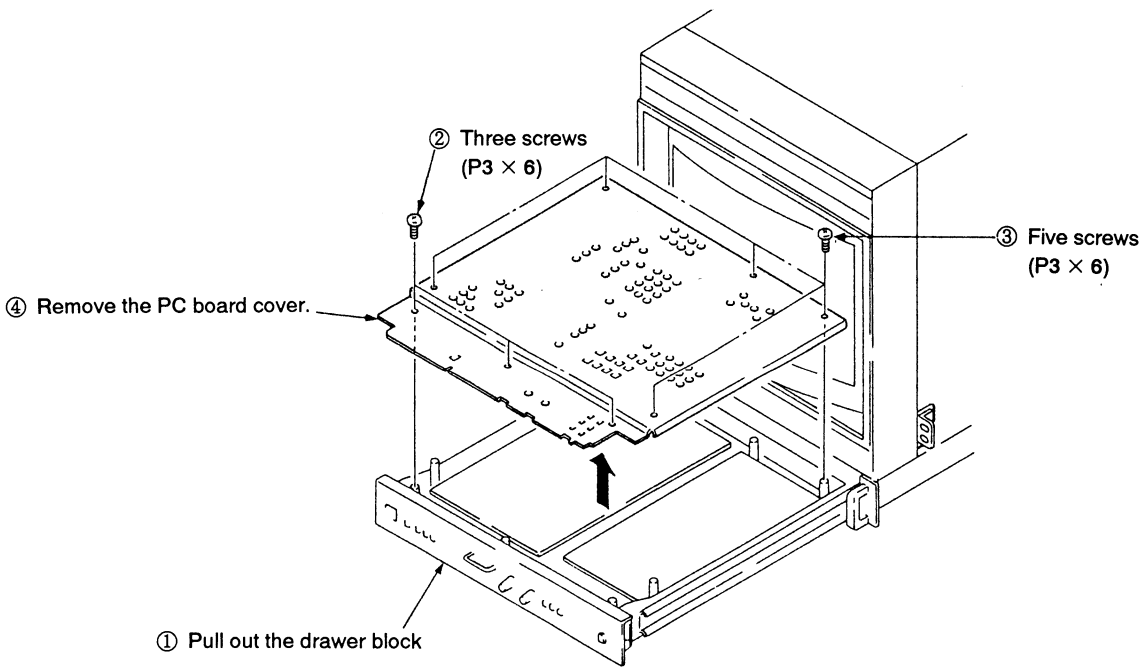


2-13. REMOVAL OF THE HIGH VOLTAGE BLOCK ASSEMBLY (FLYBACK TRANSFORMER, HV RESISTOR AND HV BLOCK)

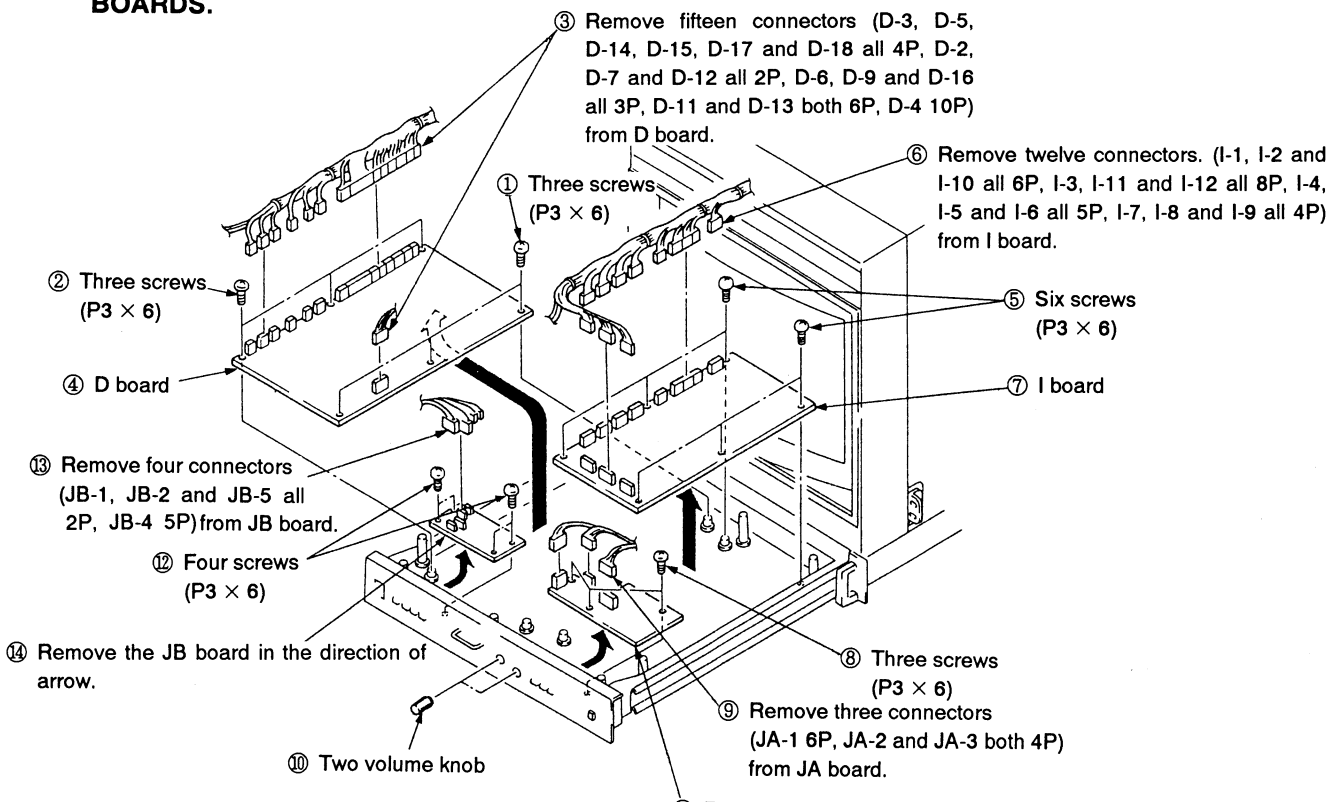
Note: Perform the servicing below after the CA block assembly and E board are removed.
(Refer to 2-7. INSPECTION METHOD OF E BOARD and 2-12. REMOVAL OF CA BLOCK ASSEMBLY.)



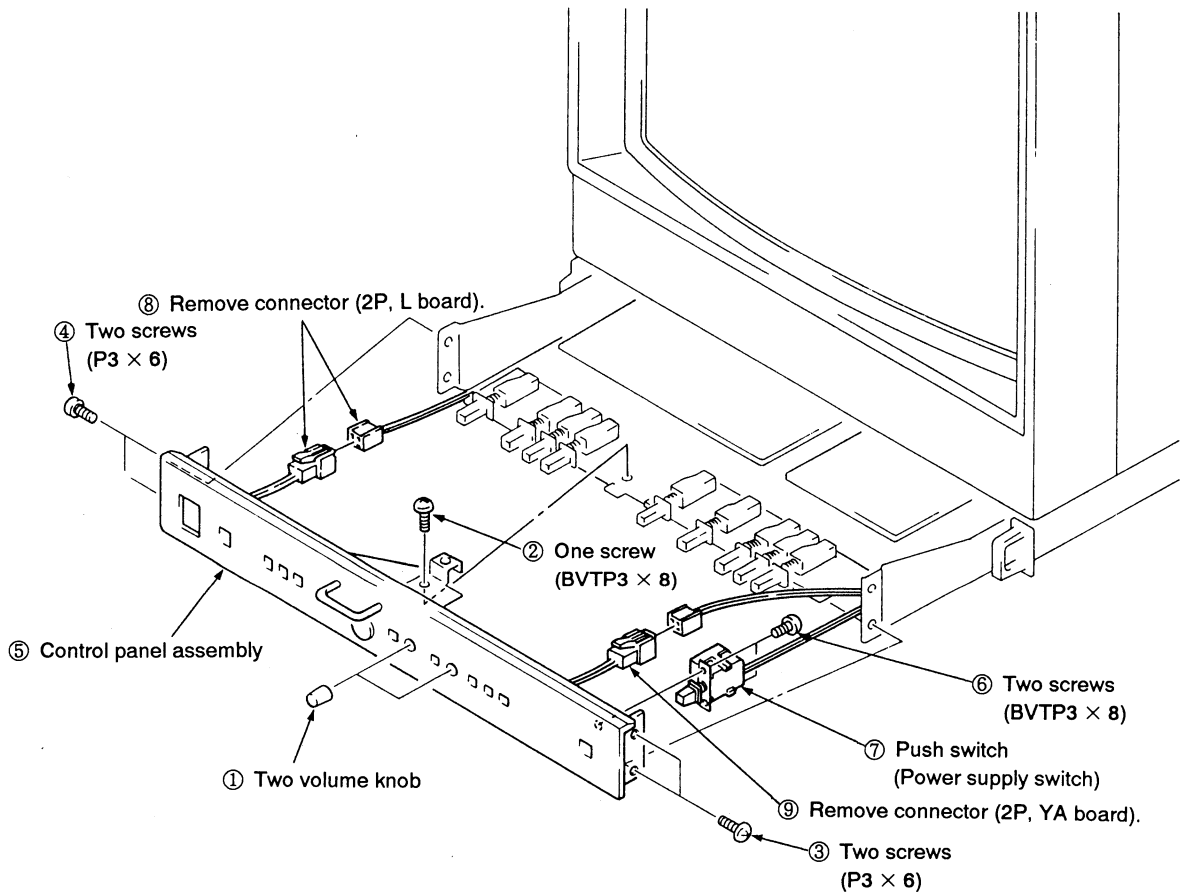
2-14. REMOVAL OF THE PC BOARD COVER (SUB CONTROL PANEL).



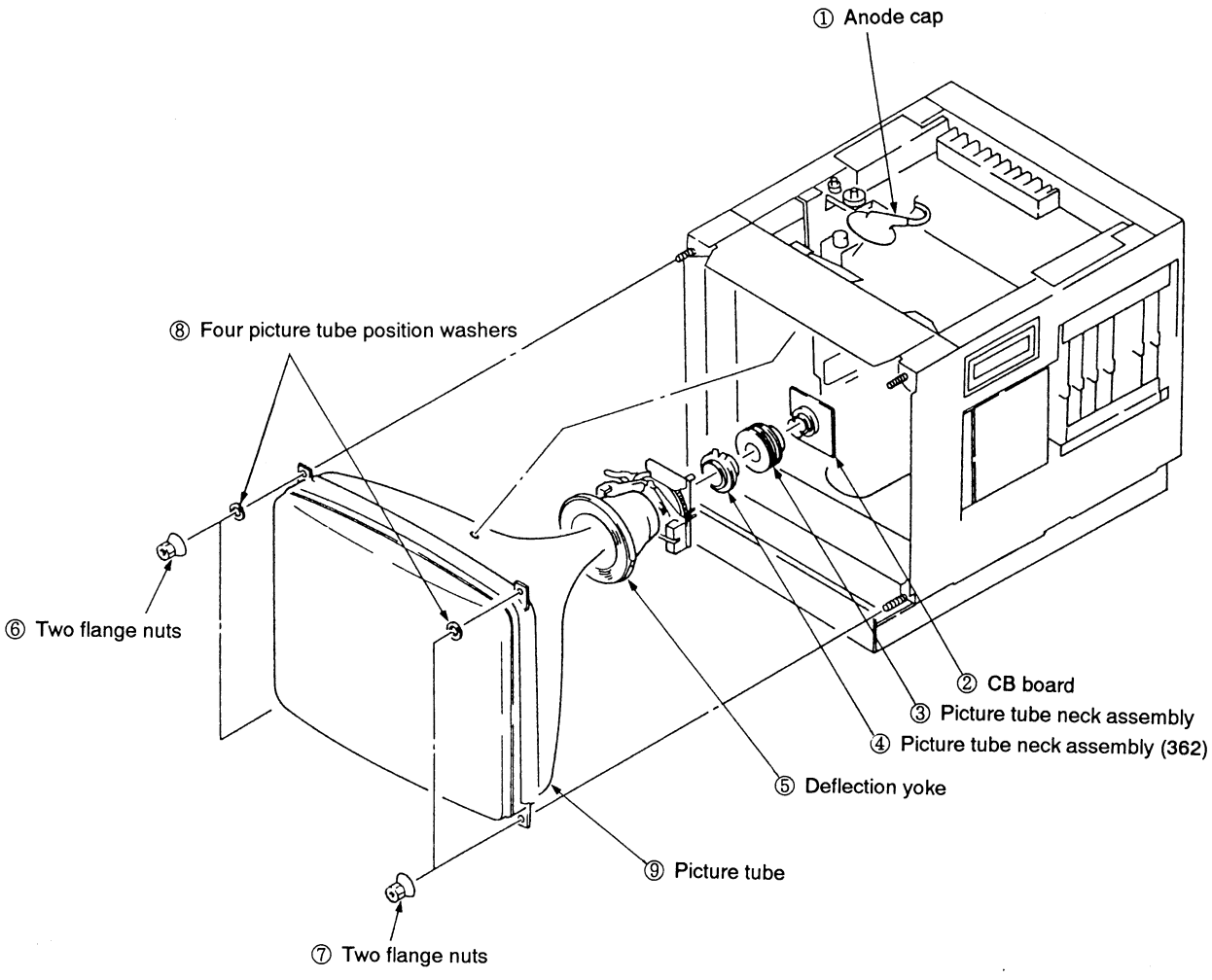
2-15. REMVOAL OF THE D, I, JA AND JB BOARDS.



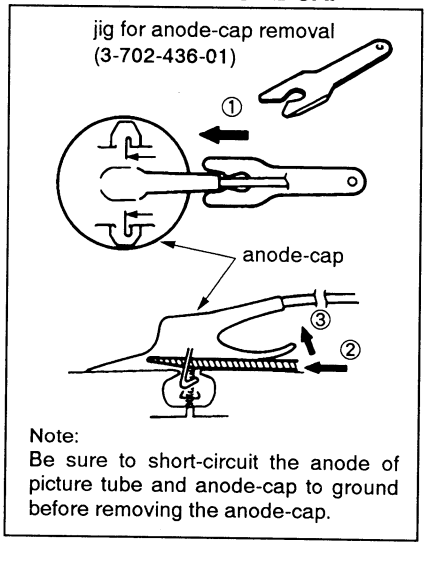
2-16. REMOVAL OF THE CONTROL PANEL ASSEMBLY.



2-17. REMOVAL OF THE PICTURE TUBE



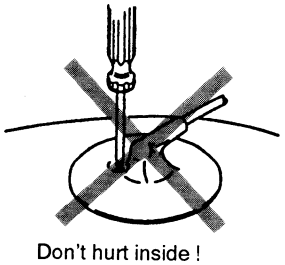
• REMOVAL OF ANODE-CAP



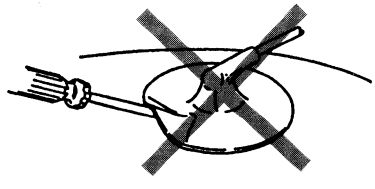
Note:
Be sure to short-circuit the anode of picture tube and anode-cap to ground before removing the anode-cap.

• HOW TO HANDLE AN ANODE-CAP

① Don't hurt the surface of anode-caps with sharp shaped material !
② Don't press the rubber hardly not to hurt inside of anode-caps !
A metal fitting called as shatter-hook terminal is built in the rubber.
③ Don't turn the foot of rubber over hardly !
The shatter-hook terminal will stick out or hurt the rubber.



Don't hurt inside !



Don't hurt outside !

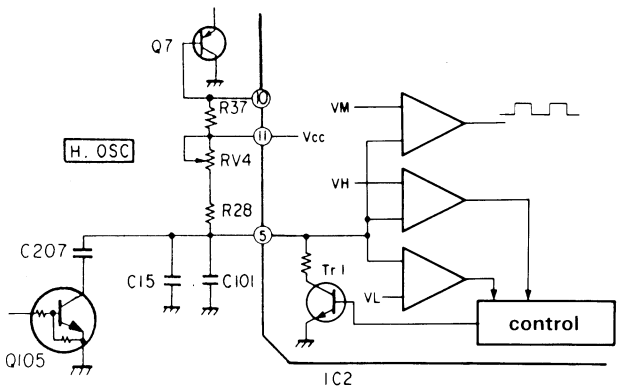
SECTION 3
CIRCUIT DESCRIPTION

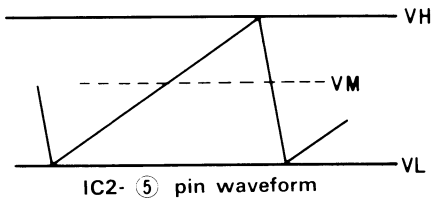
HORIZONTAL OSCILLATOR CIRCUIT (D BOARD)

When power is turned on, the capacitors C15/C101 are charged through RV4/R28 so that the IC2-⑤ pin potential is raised. Since the IC2-⑤ pin is connected to the comparator inside IC2 internally, the transistor Tr1 is switched ON when IC2-⑤ pin potential is higher than VH, while the transistor Tr1 is switched OFF when IC2-⑤ pin potential is lower than VH.

If the time constant that is connected to the IC2-⑤ pin is smaller, then the oscillating frequency will be higher, accordingly. If the time constant is longer, the oscillating frequency will be lower.

This oscillator waveform is amplified inside the IC2 and becomes the horizontal drive pulse at pin ⑩ that is output through an emitter follower Q7.





IC2-⑤ pin waveform

Horizontal oscillator circuit

AFC CIRCUIT (D BOARD)

AFC is the automatic frequency control loop that functions to detect the phase difference between the deflection circuit output and the input signal, by sampling the sawtooth voltage (this signal is obtained by integrating the horizontal deflection circuit output with R17/C10) with the H. SYNC pulse that is used as the gate signal. The gated sawtooth is then smoothed out.

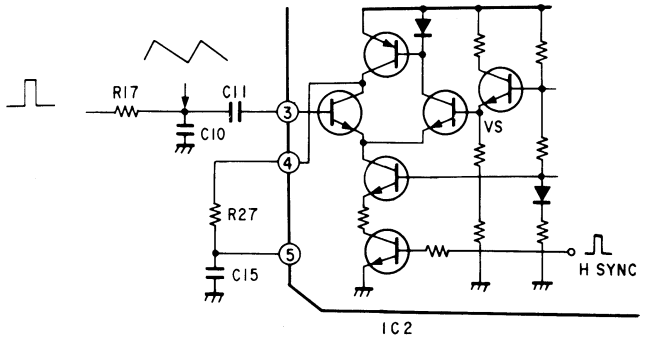
The detected phase difference output is fed back to the IC2-⑤ pin through R27 so that the oscillating frequency deviation can be corrected automatically.

The picture phase can also be changed by shifting the horizontal deflection pulse phase (RV1, RV2, RV72, RV73 and IC1).

In the PR mode, Q105 is turned on, C207 is connected in parallel to C15 and C101, and the free-run frequency decreases.

H PHASE (PICTURE PHASE) ADJUSTMENT

HDTV A	16:9 (new specifications)	RV1
	5:3	RV2
HDTV B		RV72
PROG		RV73

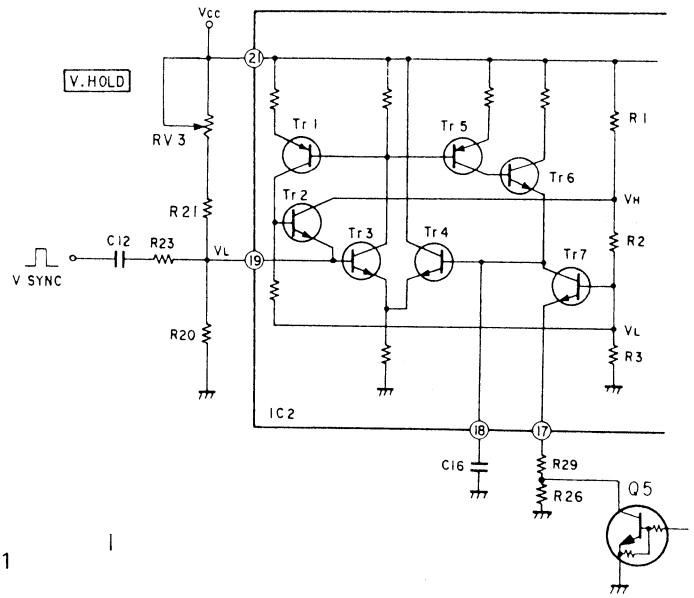


AFC circuit

VERTICAL OSCILLATOR CIRCUIT (D BOARD)

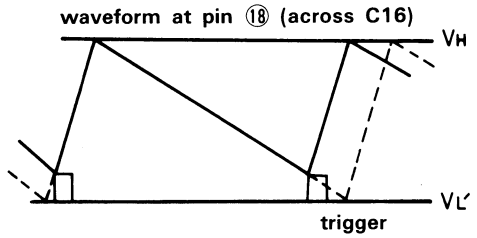
The vertical oscillator circuit operation is basically the same as the horizontal oscillator circuit. But it does not need the AFC circuit unlike the horizontal oscillator block. It has simply the trigger circuit by the vertical SYNC signal.

The C16, R29, R26 are the oscillating time constants. When the SYNC signal is not input, the transistor Tr3 base potential becomes VL' that is determined by RV3, R21, R20. Whenever power is turned on, since the Tr4 base is grounded, the Tr3 is turned on. As Tr1, Tr2 are switched on, the Tr3 base reaches VH. The Tr5, Tr6 are also switched on to charge C16 rapidly. As the Tr4 base potential is becoming higher than Tr3 base gradually, Tr3, Tr1, Tr2, Tr5, Tr6 are turned off so that C16 is discharged through Tr7, R29, R26. As Tr4 base reaches VL', the Tr3 is switched on and repeat the afore-mentioned oscillation.



If SYNC signal is input while the C16 is discharging as shown in Figure, the Tr3 is put into conduction (ON), so that the C16 is started charging to obtain synchronization.

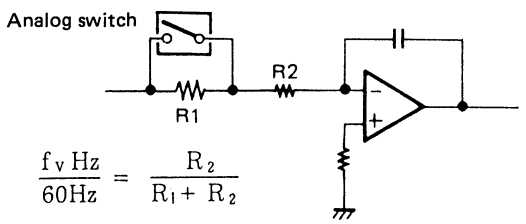
This output signal is amplified inside IC and becomes the positive polarity pulse at pin ㉒ . The pulse width of this signal is determined by the time constant of R34, C18 that are connected to pin ⑬ .



Furthermore, Q5 is turned on when a low fv is selected, lowering the free-run frequency of the vertical sync.

On the Vertical Cycle Compensation Waveform

There are many Miller integrator circuits (e.g. IC8, IC9 and IC10) inside the D board. If nothing is done to prevent it, their amplitude and phase would change when fv changes. Therefore, the input side resistance is set as shown in the figure, turning it on with the analog switch when frequency is 60 Hz and off when fv is low. In this way, the integrated output is kept constant.



Miller integrator circuit

VERTICAL DRIVE WAVEFORM GENERATING CIRCUIT (D BOARD)

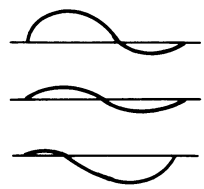
The operational amplifier IC7 (½) is used for sawtooth wave generation.

The C29, R63 form a Miller integrator circuit that generates sawtooth signal having good linearity. R63 is connected to a voltage determined by R60, RV5 and RV6. When frequency is 60 Hz, amplitude is determined by RV5. While at 60 Hz Q9 is on, at 50 Hz Q9 is off and RV6 operates. The Q10 works as a switch that resets this integrator by VD during retrace period. The sawtooth wave signal of ± 6V is provided at IC7-① pin. The IC7 (2/2) is the polarity invertor and IC8 (1/2) is the similar Miller integrator that converts output into parabolic wave at ⑦-pin that is again passed through IC8 (2/2) integrator so that output signal becomes sinusoidal (sine) wave.

The vertical drive waveform is generated by mixing these sawtooth wave signal and the sinusoidal wave signal at IC9 (½). The vertical linearity correction can be adjusted by changing the sinusoidal wave amplitude gain with RV9.

The sawtooth wave from RV7 and the parabolic wave are mixed and input to IC8-② pin. Since RV7 can change the sawtooth wave vertical balance, the RV7 can consequently change the linearity correction balance at the top and bottom of picture at IC8-① pin as shown in Figure. The vertical drive waveform receives amplitude adjustment by RV10 and is output through a buffer amplifier IC9 (2/2).

Q13 is the picture size select switch to be used during set-up.



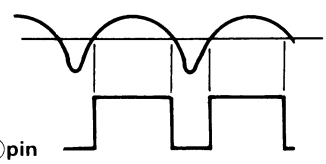
TOP AND BOTTOM PIN DISTORTION CORRECTION CIRCUIT (D BOARD)

The vertical drive voltage that is supplied from IC9-⑦ pin, is amplitude adjusted by RV18 and supplied to IC15-⑦ pin and is then routed to IC16-① pin.

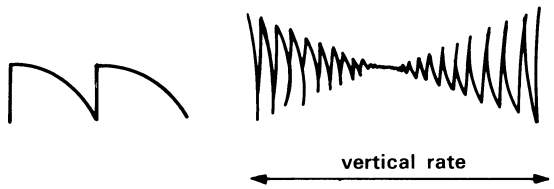
This signal is two integrators of IC14 (1/2) and IC14 (2/2) that provides horizontal rate parabolic wave that is supplied to IC16-⑩ pin.

Q22, Q23 are reset switch where its timing is determined by IC12, IC13.

Since IC16 is a balanced modulator IC, signal is balanced-modulated by the pin ⑨ input signal. The output IC16- ⑫ pin has therefore top and bottom pin correction waveform output as shown in figure. This output is sent through an emitter follower Q25. The horizontal parabola phase is determined by IC12 and IC13. The horizontal pulse from the horizontal deflection circuit is switched by Q19, and is integrated twice by L1, C41 to generate the parabolic wave. This waveform is passed through a comparator IC12 so that the reference pulse synchronized with the horizontal defection is obtained at IC12-⑦ pin.



Using this reference pulse, a triangular wave is generated by Q20, R137, C63. This signal is input to comparator IC13-③ pin and output at IC13-⑦ pin. Dc voltage is supplied from RV17 to IC13-② pin so that the phase of this output pulse can now be changed by RV17. This output signal is routed to Q21 to be converted to the reset pulse of Q22, Q23.



LEFT AND RIGHT PIN CORRECTION WAVEFORM CIRCUIT (D BOARD)

IC10-① pin (½) receives the mixed signal of the sawtooth wave from IC7-⑦ pin, sinusoidal wave from IC8-① pin whose amplitude can be adjusted by RV54, and the dc voltage from RV12. After passing through the integrator IC10, the left and right pin correction waveform is obtained at IC10-⑦ pin.

In the HDTV A, gain of this waveform is adjusted by R113 and RV14, then it is output via the buffer amplifier IC11.

The horizontal picture size control voltage is selected by RV15, then it passes through IC28 and the voltage follower IC11 before being output.

BLANKING WAVEFORM GENERATING CIRCUIT (D BOARD)

The horizontal cycle blanking pulse is generated by shaping the horizontal pulse with Q26 and Q28, then sending it out through Q109 and Q110. On the other hand, the vertical cycle blanking signal is input to Q27, then it undergoes AND gating with Q26 and it is output to the CA board as a composite blanking signal. In the HDTV B, a variable blanking pulse is added by Q114.

This pulse is generated as follows.

The pulse from the horizontal deflection circuit is input to Q115, the pulse from Q115 is input to the double integration circuit composed of L7 and C223 and converted into a parabola wave. The phase of this wave is changed by RV76. It passes through C224, then it is input to ③-pin of the comparator IC31 and a pulse corresponding to the voltage at ②-pin is output from IC31-⑦ pin. This pulse is added as the above-mentioned composite blanking signal, assuming a wide H size signal, e.c. (provisional MUSE specifications).

DESCRIPTION OF CONVERGENCE CORRECTION SYSTEM

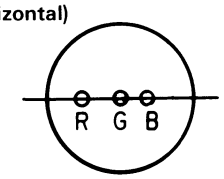
Prior to the circuit description, the convergence correction method is first described as follows.

BEAM ALIGNMET ADJUSTMENT

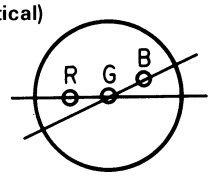
The TRINITRON employs the in-line type guns. There is possibility that the RGB beams will not go through the deflection center because of the non-uniformity in gun assembling process, or the tolerance when guns are sealed into neck. As the result, the side beams become nonsymmetrical with regard to the center beam, so that the convergence becomes difficult.

To cope with this problem, this equipment uses six pole magnet to be used for beam alignment correction. The actual alignment procedure is provided in the Alignment section.

beam nonsymmetrical (horizontal)



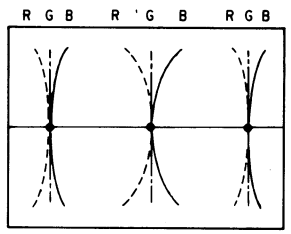
beam nonsymmetrical (vertical)



TRANSVERSAL CONVERGENCY CORRECTION

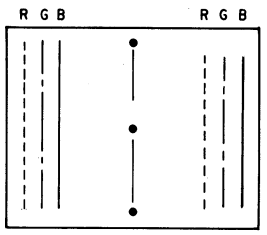
The super fine pitch TRINITRON convergence system outline is simply described as follows. The DY (deflection yoke) used in this system has an uniform magnetic field in order to avoid CRT beam spot distortion.

The CRT focus is therefore superior,but transversal convergence error as shown in Figure can happen.



Y-axis direction transversal convergence error

(When the X-axis transversal convergence error is corrected.)



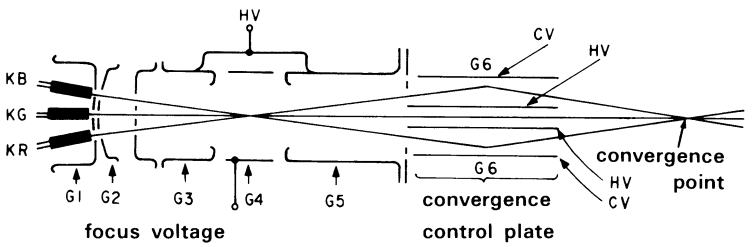
X-axis direction transversal convergence error

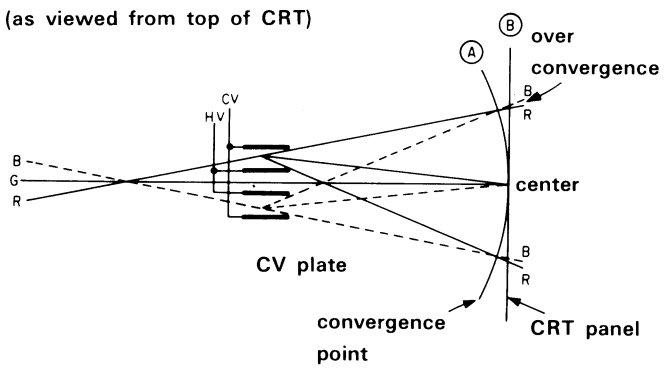
(When the Y-axis transversal convergence error is corrected.)

ELECTRO-STATIC CONVERGENCE

One of unique feature of the TRINITRON is the electro-static convergence that is described as follows. The Figure shows the gun structure. The G6 is the convergence control plate (CP) that is receiving the convergence voltage (CV 0.97×HV) from high tension supply (HV) through a high tension resistor (HVR). Since the center beam (green) receives no electric field strength, the center beam is not bent but runs straight.
However, the side beams (red and blue) are bent by the electric field produced by the G6 convergence control plates.

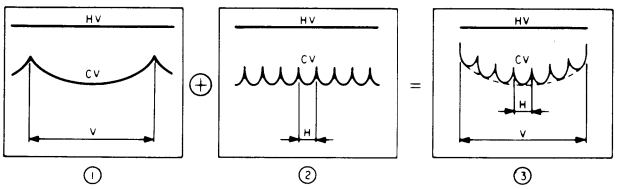
Controlling this CV voltage moves the convergence point. The electro-static system therefore is capable of convergence correction. The widely used convergence correction system employs an electro-magnetic coil, which deforms the beam shape and gives adverse effect on focus. But this electro-static system, using the CV electrode does not have such disadvantages but provides good focussing characteristics.



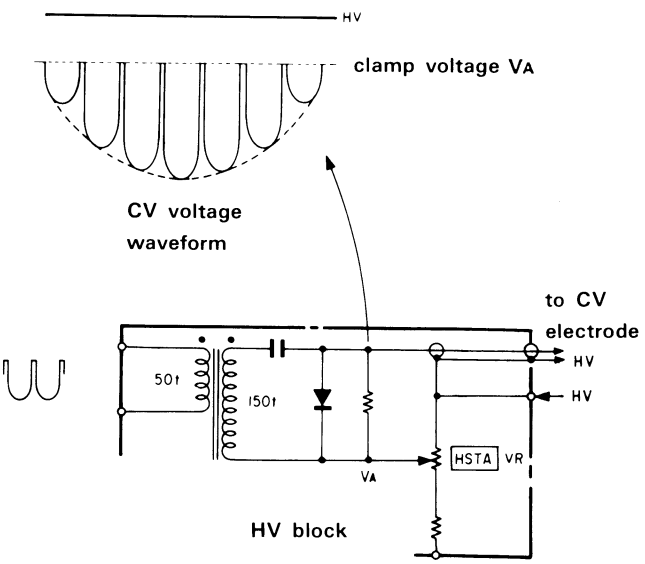


Turning back to the X-axis direction convergence error problem, the reason why the X-axis direction convergence error is generated, is described as follows. The Figure shows that the point Ⓐ is the R, G, B, convergence point when the dc convergence voltage is applied to the CV electrodes, indicating that the convergence points become cylindrical shape. However, the CRT front panel Ⓑ has nearly flat shape rather than cylindrical shape. It results that the both sides of the CRT front panel have excessive correction of convergence. This is the reason of the X-axis direction convergence error. The Y-axis direction transversal convergence error is, in the same manner as the X-axis convergence error, able to be corrected by applying the correction voltage to the CV electrodes as shown in Figure.

The above two convergence correction signals are mixed so that the mixed waveform as shown in Figure is the needed convergence correction waveform.

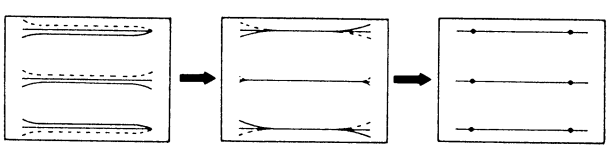


Now, since the CV electrode is receiving the very high voltage (≒ 25.7 kV), the DCT (Dynamic convergence Transformers) is used to transmit the convergence correction waveform in order to get insulation. Since the vertical rate voltage is impossible to transmit by use of transformer, chain of pulse are inserted during the retrace period of horizontal deflection. These pulses are peak-clamped by the diode peak clamp circuit in the DCT secondary circuit so that the correction voltage is transmitted. The Y-axis direction transversal convergence error can be corrected by changing the amplitude of these pulses.



LONGITUDINAL CONVEGENCE CORRECTION

The longitudinal-direction convergence error does not exist from the princple because the gun structure is designed as in-line. However, due to the non-uniformity in assembling the CRT and DY, and also due to the earth magnetism effect, very small amount of the longitudinal convergence error is taking place.



① longitudinal direction convergence error

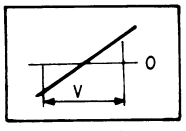
② after corrected by NTC

③ after further corrected by CY

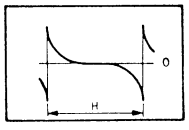
The longitudianl convergence error is corrected by two methods.

1. The longitudial convergence error along with the Y-axis (dc components) is corrected by NTC (Neck Twist Coil) as shown in Figure ② while, 2. The longitudinal covergence error in both sides (ac components) is corrected by the CY (Convergence Yoke), as shown in Figure ③.

The correction waveforms needed to carry out the convergence error correction as shown in Figure ②, ③, are the NTC and CY correction waveforms as shown in Figure ①, ②.



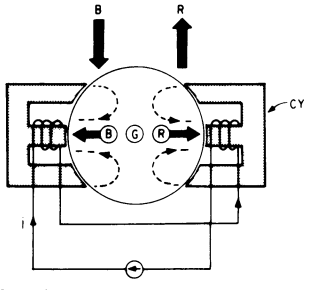
①NTC



②CY

There are two CYs in HDM-1730/1730E. One of them performs the previously mentioned operation, but since a highfrequency current is sent through it (the CY is an inductance) and the blanking period is short (3.77 μs), the correction waveform is delayed, and the left side cannot be properly corrected. Therefore, a sub-CY is used for complementary correction.

Strength that the beam receives.

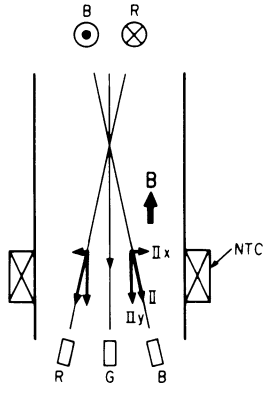


(As viewed from neck end)

Figure shows the CY (Convergence Yoke),as viewed from the neck side. As the CY (Convergence Yoke) is generating the magnetic fluxes, it provides the physical strength toward beams as shown in Figure. The strength on the side beams area (B and R) are, as shown in Figure, generated in opposide directions each other by the CY synthesized magnetic fluxes. The one direction of strength is to raise the one beam upward direction, while the another direction is lowering the another beam downward direction.

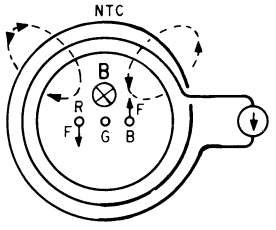
The center beam receives no strength from the CY's magnetic fluxes because the magnetic fluxes are cancelled to zero in the center beam area. The red and blue beams moves in the vertical directions symmetrically against the green beam in the center.

Strength that the beam receives.



(As viewed from the the top of CRT)

①



(As viewed from the CRT neck end)

②

The longitudinal convergence correction along with the Y-axis is carried out by the NTC (Neck Twist Coil). The NTC (Neck Twist Coil) has the coil winding as shown by the dotted line in Fig. ②. The NTC produces the magnetic flux as shown B in the same Fig. ①. Since the magnetic flux B is in parallel with the center beam, the center beam receives no strength, and does not move at all. The side beams' currents I and II receive strength in two directions of the Ix direction and the Iy direction as vectoranalyzed in Fig. ②. Only the Ix component alone receives strength from the NTC magnetic flux and is bent. Therefore, the red and the blue beams are shifted upwards and downwards symmetrically against the green beam by the NTC coil's magnetic flux change. This is the description of the convergence correction system. Following is the circuit description.

MODULATION WAVEFORM GENERATING CIRCUIT (D BOARD)

The convergence correction waveform is made by adding the D board and the I board.

The analog correction system provides the fifteen convergence adjusting points on the monitor screen. These are three adjusting points in the horizontal direction and five adjusting points in the vertical direction. The convergence adjusting controls (veriable resistors) correspond to the adjusting points on the monitor screen. The three horizontal convergence adjusting points are provided at five of each vertical convergence adjusting points i.e. total fifteen convertence adjusting controls are provided. Since the picture screen is divided into five blocks vertically for the convergence correction as shown in Figure the five different modulation waves as shown in Figure are prepared for vertical convergence correction.

Fig. a signal is to be used for top of picture correction.

Fig. b is to be used for top-center of picture correction.

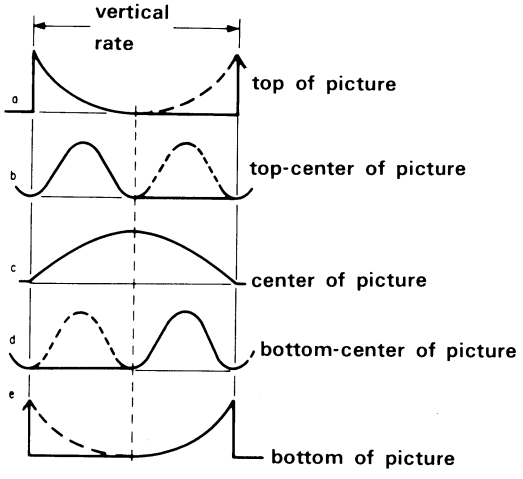
Fig. c is to be used for center of picture correction.
Fig. d is to be used for bottom-center of picture correction, and
Fig. e is to be used for bottom of picture correction.
These waveforms are generated principlely from the vertical rate parabola waveform and the half-of-vertical rate sinusoidal (sine) waveform, after they are divided.

1) V. parabola

The vertial rate parabola that is obtained from IC8- 7 pin is clamped to ground potential by the clamper circuit of Q49, Q50, and is output.

2) V/2 sine generator

The vertical rate square wave from IC18(2/2) is differentiated and shaped by Q34. Then the pulse that is 180 degrees phase apart from the vertical drive pulse (VD), is obtained. This pulse and the VD are added and are applied to the Miller integrator of IC15(2/2) as its reset pulse. Then half-of-vertical rate sawtooth weve (V/2 sawtooth wave) is obtained from the Miller integrator IC15- 1 pin output. This output is then again integrated by another Miller integrator IC19(1/2). Then the parabola waveform is obtained. The output parabola waveform is converted into sinusoidal (sine) wave by the active filter of Q40, Q43, is clamped to the ground potential by the clamper Q44, Q45, and is output. Accordingly the repetition rate of this sinusoidal wave becomes half of the vertical rate.

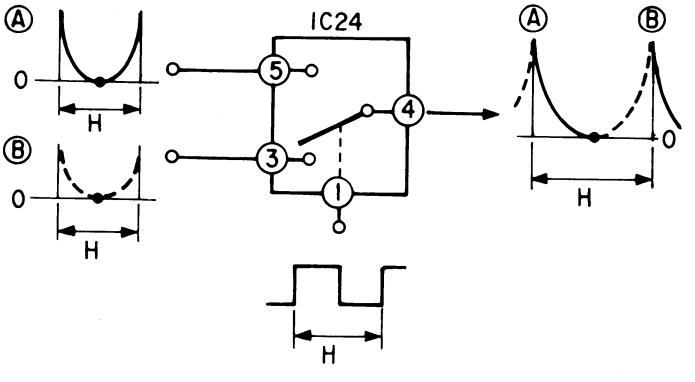


The above described three voltage waveforms are polarity inverted respectively by IC20 (2/2), IC20 (1/2) and IC 19 (2/2) so that polarity-inverted voltage-waveforms are obtained respectively. The IC18 (2/2) is the zero-cross detector. If a sawtooth wave having its average level equal to ground level, is input to this zero-cross detector, the zero-cross detector outputs 50% duty cycle square wave. This output voltage drives the analog switchers of IC23 (2/3), (3/3), and IC24 (2/3), and (3/3) respectively. These analog switchers switch the input voltage waveforms (vertical parabola and half-of-vertical rate sine wave) in vertical rate in time domain.

HORIZONTAL DIRECTION CONVERGENCE CORRECTION CIRCUIT (D BOARD)

Convergence of the left part of picture, is corrected as follows. The IC26-⑦ pin signal that is synthesized by RV37 thru RV41, is switched by the horizontal rate pulse from the horizontal deflection at Q69. This output is converted into parabola waveform by the two times intergration by L5, C139. This parabola output is amplified by Q70 and is zero-clamped by IC26 in the center of horizontal trace of picture. The clamp pulse is supplied from Q33. The clamped parabola signal is supplied from Q71 to IC24 (1/3)-③ pin. This is the convergence correction signal for the left part of picture. The convergence correction signal for the right part of picture is generated in the same manner. The convergence correction signal synthesized from RV47 thru RV51, passes through the equivalent circuit by IC27 in order to make up the correction signal for right part of picture, and is then supplied to the analog switcher, of IC24 (1/3)-③ pin. Since this analog switcher is receiving the horizontal rate control voltage input to its control pin of IC24-① pin, the correction waveform is switched during the former half and latter half of horizontal trace i.e. the right half and left half of horizontal scan of a picture are receiving different convergence correction waveform respectively.
This correction waveform output is supplied through R387 into Q66. Since Q66 is receiving also the I board through R406, Q66 provides the addition of D board and I board. This is the correction signal for the right side of picture. The convergence correction signal for the center of picture is obtained from RV42 thru RV46 and is output from IC25-⑦ pin. This signal is passed through R377, R380 and is input to Q65. The digital correction signal is at the same time provided through R374, and added to the analog correction signal so that the digital and analog correction signals are added and input to Q66. This output signal is converted into a chain of pulse signal as Q31 pulse is input to D15.

Accordingly, the horizontal convergence correction signal from Q68 is the voltage waveform that is the addition of Q65, Q66 and is output from Q68.



VERTICAL DIRECTION CONVERGENCE CORRECTION CIRCUIT (D BOARD)

The vertical direction convergence correction circuit, in the same manner as the horizontal direction convergence correction circuit, picks up the waveforms from RV22 through RV26 and RV32 through RV36. These waveforms are clamped to the zero potential in the center of horizontal scan. The left half and the right half of scan have the different waveforms as switched by IC23(1/3), and are buffered by emitter followers Q59, Q60, and are output. The digital correction waveform is supplied through R301 and is added to the analog correction waveform at Q59. The vertical direction convergence correction for the center of scan is mixed by RV27 through RV31 and amplified by IC25(1/2), Q63, Q64 current amplifier, and drive the NTC. The digital correction waveform is added through R347, at IC25. Furthermore, the waveform from the circuit including RV22 to RV26 (which incorporates an auxiliary circuit to make up for insufficient correction of the left side) is converted into a pulse train by Q51, it passes through IC32 and the amplifier composed of Q117 and Q118, then it is output to the E board. This becomes the sub-CY correction waveform.

VERTICAL DEFLECTION OUTPUT CIRCUIT (E BOARD)

The vertical deflection sawtooth wave and the top/bottom of scan pin-cushion correction waveforms are input the differential amplifier Q9, buffered by Q12, amplified by Q10, Q11, Q13, Q14 the SEPP complementary amplifiers, and drive the vertical deflection yoke. The top/bottom of scan pin-cushion correction transform T3 (VPT), that is connected to the output terminal of the vertical deflection transformer, picks up only the horizontal rate top/bottom pin-cushion correction waveform, steps up this waveform, and modulates the deflection yoke current by its secondary winding. The R45, R46, R47, that are connected to T3, are the damping resistors for T3 and the vertical deflection yoke, that improves the deflection at the top of picture. The resistor R49, that is connected to the bottom of VPT's secondary winding, detects the deflection; yoke current, and applies negative feedback (NFB), in order to improve the deflection waveform. The thyristor D15 is turned ON, as it receives the vertical deflection yoke's fly-back pulse during the vertical retrace period through R41, C12 to its gate, so that the deflection current linearity is improved by introduing the high tention voltage during the retrace period. The inductance L7 in the D15 anode circuit converts the sharp current change in the thyristor ON transient, into the resonant current by L7, C20 so the thyristor D15 will surely turned OFF when the thyristor triggering current becomes lower than its keep current.

HORIZONTAL DEFLECTION OUTPUT CIRCUIT (E BOARD)

The left, right sides' pin-cushion correction is performed by modulating the power supply voltage of the horizontal deflection circuit. This pin-cushion correction is executed by the circuit of IC1, Q1, Q2, Q3. Q2 is the output transistor while IC1 is the error amplifier. The left/right pin-cushion correction waveform from D board and the picture size determining dc voltages are introduced to IC1 ⑤ pin. The IC1 ⑥ pin is the detect voltage by R9 through R11.

The horizontal drive pulse from the D board is introduced to Q4 that drives the horizontal drive transformer T1 (HDT). The horizontal drive transformer T1's secondary circuit is connected to the horizontal deflection output transistor Q5 through R17 and the speed-up diode D3 that is switching Q5. The Q5 collector circuit is connected to the horizontal deflection yoke, the resonance capacitor C10, C11, C98, C99 and C100 and the damper diodes D4, D60, D61 and D80. The Q5 collector circuit is also connected to the left, right pin-cushion correction power supply that is fed from the horizontal output transformer T3 (HOT).

In the prog mode, the horizontal frequency f_H drops. The peak voltage Vcp of the flyback pulse is as follows:

$$Vcp = E\{1 + \pi/2\ (1/f_H\ Pw - 1)\}$$

E: power supply voltage
PW: flyback pulse width
Thus, Vcp rises when fH drops, and Q5 may be damaged. To prevent this, turning on Q24 is the prog mode short-circuits C11 and C99, expands Pw, and lowers Vcp.

One of the secondary windings of the horizontal output transformer T2 (HOT) generates the horizontal position adjustment power at D6 and D7, and performs horizontal position adjustment by means of Q6 and Q7. The other secondary winding is a pulse winding used for dynamic focus. The signal it generates is converted into a parabola wave at the circuit composed of L3 and C90, then sent into the T4 DFT.

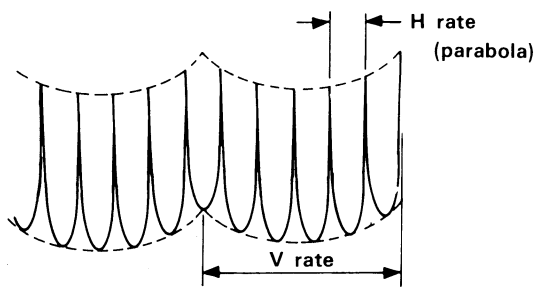
The horizontal deflection current that flows through the horizontal deflection yoke, also flows through the horizontal linearity coil L2 (HLC) and the S-shape distortion correction capacitor C16, C107. Since the linearity coil L2 (HLC)'s inductance changes in accordance with the amount of current flowing, the left, right sides of picture linearity is improved. The capacitor C16 and C107 corrects the linearity difference between the center of picture and both sides of picture.

DYNAMIC FOCUSSING CIRCUIT (E BOARD)

The transformer T2 (HOT) provides the horizontal pulse output voltage that is integrated by L3, C90, and is again integrated by the primary winding of the dynamic focus transformer T4 (DFT), so that the secondary winding generated approximately 800 Vp-p parabolic voltage. The transistor Q34 amplifies the IC10 ⑦ pin (D board) output vertical rate parabolic voltage up to approximately 250 Vp-p.

Since T4's secondary winding is connected to the Q34 output circuit, the another end of the T4's secondary winding supplies the dynamic focus waveform that is the addition of the horizontal rate parabola signal and the vertical rate parabola signal. This dynamic focus signal is fed to E-6, to the K board, to the capacitor C1, and then to the FOCUS adjusting variable resistor so that the focus voltage is modulated.

The AFC pulse is rectified by D18, C28 that generates approximately −300V power that is supplied to Q34.



VERTICAL DIRECTION CONVERGENCE OUTPUT CIRCUIT (E BOARD)

The vertical direction convergence correction waveform from the D board passes through the current amplifier circuit composed of Q22, Q23, and Q25 through Q28, and is then sent to CY. On the other hand, the auxiliary vertical direction convergence correction waveform passes through the current amplifier circuit composed of IC8, and Q44 through Q47, and is then sent to the sub-CY.

HORIZONTAL DIRECTION CONVERGENCE OUTPUT CIRCUIT (E BOARD)

The horizontal-direction convergence correction waveform from the D board passes through the voltage amplifier circuit composed of Q16 to Q21, then it is sent into the DCT transformer.

"EHT" REGULATOR CIRCUIT (E BOARD)

The horizontal drive pulse, that is supplied from the terminal E3, is amplified by Q29, Q30, coupled by T5 (CDT), and drives the high voltage output amplifier Q31. This transistor Q31's collector has C47, D29, T6 (LOT), and (after passing through the K board) the fly-back transformer (FBT). This circuit operates in exactly same manner as the horizontal output circuit.

The +B power is supplied through T6. The FBT is the multi-singular type transformer, having six rectifying diodes in the secondary circuit. The second tap of the FBT supplies the focus voltage.

The highest voltage of the FBT is the high tension output that is routed through the HV block, and to the CRT anode. The high tension output is, at the same time, divided into 1/3570 voltage by the high tension resistor network, and is supplied to the connectors E17 ③ pin and to E17 ⑤ pin. The 1/3570 divided high tension voltage, appearing at the connector E17 ③ pin is used as the high tension's error voltage detection signal which is passed through the buffer IC3(2/2), and to the error amplifier IC3(1/2) where the high tension's error voltage is compared with the reference voltage (VRV=8.95V). The comparison output is amplified and drives the differential amplifier IC4 ⑤ pin.

Since the IC2 ⑦ pin is connected to the IC4 ③ pin, the IC4 ① pin repeates the on, off operation that charges the C62, that is forming the sawtooth generator. The IC4(1/2) is the pulse width modulation (PWM) circuit. The pulses that is generated at the IC4 ⑦ pin is buffered by Q32, and then gates D57. This circuit thus enables to control the back pulse's energy generating at anode of Q57, that is namely controlling the energy to the FBT. This is the "EHT" regulator circuit operation.

This EHT regulator is generating, at the same time, the various outputs such as ±22V output (used for vertical output circuit), +30V (used for CY drive) from T6 (LOT), 6.3V (for heater), −120V (used for G1 bias), etc.

HIGH VOLTAGE HOLD-DOWN CIRCUIT (E BOARD)

The feed-back voltage that is supplied from the HV block, appearing at the terminal E-17 ⑤ pin is normally 8.40V. This signal is input to the comparator IC5(2/2) ⑤ pin so that it is compared with the another input voltage at IC5 ⑥ pin input. The voltage value of the VHV signal is determined by R140, R141 so it will be 9.9 ± 0.20V. Therefore, IC5 (2/2) ⑦ pin output is normally "LOW". However, if the high voltage should increase abnormally by some accident until the IC(2/2) ⑤ pin + input voltage exceeds the VHV voltage, the IC5(2/2) ⑦ pin output becomes "HIGH", that turns on the thyristor D45. Since the D45 anode is connected to the high voltage convertor drive IC2, the high voltage is held-down as the D45 is turned on to remove the high voltage drive pulse.

The high tension voltage value is calculated by the following equation to start the hold-down operation.

$$HV\ (PRT) = 9.90\ (\pm 0.20\%) \times 3000\ (^{+\ 3\%}_{-\ 1\%}) = 29.7^{+\ 1.5}_{-\ 0.9}\ kV$$

BEAM PROTECTOR CIRCUIT (E BOARD)

If the CRT anode current should increase abnormally by some accident, This beam protector circuit stops the generation of the high voltage which is a kind of the ABL circuit. This equipment has two beam protectors.

The anode current detection method is through the use of detector resistor that detects the FBT's secondary current (which is the addition of the CRT curent + high tension resistor's current + focus resistor current). The detected signal is in the form of voltage signal. The detector resistors are R134, R135, R136, R182. As the ABL current flows, the connector E-17 ⑦ pin voltage is decreased. Since the current flowing through the high tension resistor and focus resistor, which is the bleeder current, is constant,the abnormal increase of CRT current decreases the IC5(1/2) ③ pin ⊕ input voltage lower than its ② pin ⊖ input voltage (VRV). Therefore the IC5 output becomes LOW. Since the IC2(2/2) forms a hysteresis comparator, its output is kept LOW which stops the high tension comparator drive IC2(2/2) through D43. This is the beam protector-1 operation.

The D44 cathode is connected to the terminal E-17 ⑦ pin (ABL) at the same time. If the beam protector-1 should not start operating by some accident, the D44 conducts in turn, that decreases the IC6(2/2) ⑤ pin input voltage. As the IC6(2/2) ⑤ pin + input volage becomes lower than its ⑥ pin − input voltage, its IC6 ⑦ pin output becomes "HIGH" to "LOW", that drives the diode D54 into conduction. Therefore, the IC2 output is cut-off to stop generation of the high voltage. This is the beam protector-2 operation.

CRT (CATHODE RAY TUBE) PROTECTOR CIRCUIT (E BOARD)

If the deflection circut should fail to operate and should stop to scan, it will result in burning of fron phospher plate of the CRT. In order to avoid the phospher burning, the high tension circuit operation is stopped as soon as the horizontal deflection output or the vertical deflection output is stopped its operation. The horizontal and the vertical deflection output is detected as follows.

The horizontal deflection circuit T2 (HOT)'s secondary pulse is rectified and smoothed out by D46, C76 to be converted into the dc voltage that is supplied to the IC6(2/2) ⑤ pin. Since the IC6 ⑥ pin is receiving dc 6V from the D48, stoppage of the horizontal deflection decreases the ⑤ pin voltage lower then the ⑥ pin voltage so that the IC6 ⑦ pin output is set "LOW" that stops the high tension drive operation through D54.

The vertical deflection circuit has the same operation. The vertical deflection output pulse is converted into dc voltage by D50, C80 that is connected to IC6 ③ pin. If the vertical deflection should stop, the ③ pin voltage becomes lower than ② pin voltage so that the output IC6 ① pin becomes "LOW" that stops the high tension.

The C78, R170 are used for prevention of errorneous operation of this protector circuit when the power switch is turned on.

I BOARD

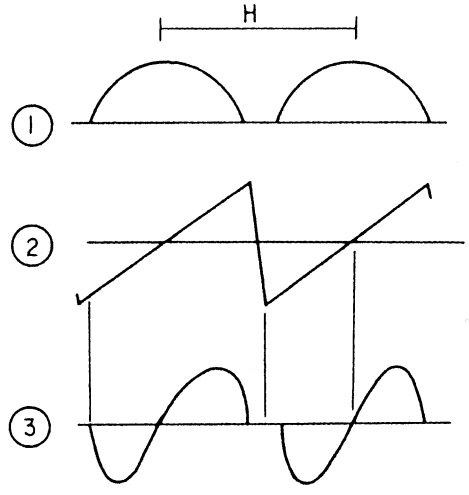
Sub Convergence Circuit

I board corrects five H and V convergence points, in addition to that on the D board.

IC102 (CXA1158P) generates various waveforms available for convergence correction, etc. by H and V pulse signals. In consideration of waveform and phase, H pulse phase is changed by Q101 and IC101 and input to IC102.

Sub convergence (H)

The H period parabola waveform output from Pin ⑱ of IC102 is wave-shaped (①) and it is multiplied with H period sawtooth-wave (②)output from Pin ⑳ of IC102 by multiplier (IC104). (③)



The waveform output from IC104 is switched at both sides of the screen by analog switch (IC112 1/2), and generates the horizontal direction convergence correction waveform at both sides of the screen center.

Sub convergence (V)

A waveform multiplied by the H period sawtooth-wave and V period parabola wave is obtained from Pin ⑬ of IC102. Furthermore, resulting waveform is multiplied (IC114) by H period parabola wave, and is switched at each section with IC112 (2/2) and IC113 (1/2), obtaining the vertical direction convergence correction waveform at upper and lower section of both sides of the screen center.

Double Hatch Generation Circuit

Double hatch signal is generated by mixing the delayed hatch signal output from the BE board during HATCH INV mode of the built-in signal generator and its original signal.

Horizontal and vertical lines of the hatch signal are delayed by IC51 and the circuit composed of Q51, Q52 and IC52 (1/4, 2/4), respectively.

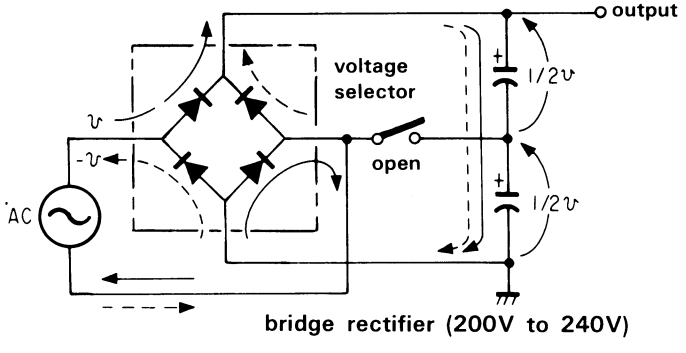
LINE FILTER CIRCUIT (F BOARD)

The line filter is made from the F board T1, T2, C1, and C3 thru C6. The input circuit of this filter is connected to the AC INLET (CNP901).

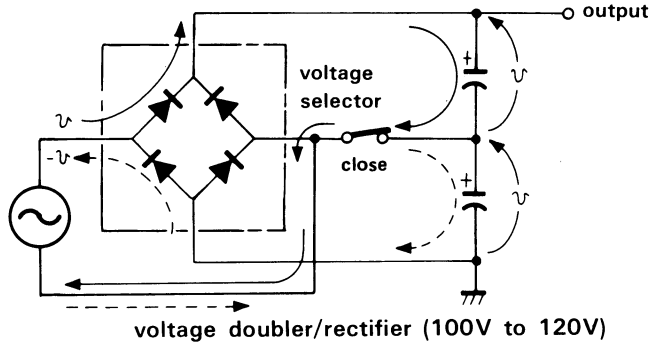
AC POWER LINE VOLTAGE SELECTION (F BOARD)

The ac power line voltage selection is made by the voltage selector (S902). Either the voltage doubler rectifier or the full wave rectifier is at the same time selected by the voltage selector. AC100V to AC120V or AC220V to AC240V input line voltage can be used by selecting the proper position of the voltage selector.

Ac power line selection



bridge rectifier (200V to 240V)



voltage doubler/rectifier (100V to 120V)

3-4-3. Blocking Power Supply (F Board)

The circuit composed of Q1, Q2 and T3 (converter transformer) is the blocking power supply block, where supplies the starting voltage to the switching regulator block 1 at turning the power switch on.

DEGAUSSING CIRCUIT (F BOARD)

The degaussing coil is used when CRT is going to be demagnetized. The demagnetization is done by the degaussing coil (L901) that has the posistors connected in series. The ac alternating damping curring is flown through the degaussing coil for demagnetization. The relay (RY-1) in the F board and the transistors Q1, Q2 in the GA circuit board flow the degaussing current automatically during the initial few seconds after POWER switch is turned on. When the front panel degauss button is pressed, the current also flows in the same manner. The posistors are selected for ac 100V-120V use (5 ohms) or ac 220V-240V use (30 ohms) by the voltage selector operation.

EXCESSIVE AC INPUT VOLTAGE PROTECTION CIRCUIT (F BOARD)

If the excessive input voltage is applied to the ac power input line, or if the voltage selector's setting is errorneously made and the power switch is turned on by mistake, the protection circuit of D1 etc.,in the GA board starts operating to blow the ac fuse (F901). The circuit is designed to start operating when the ac input voltage of approximately 14% or higher voltage than the specified voltage that is rated by the voltage selector is input.

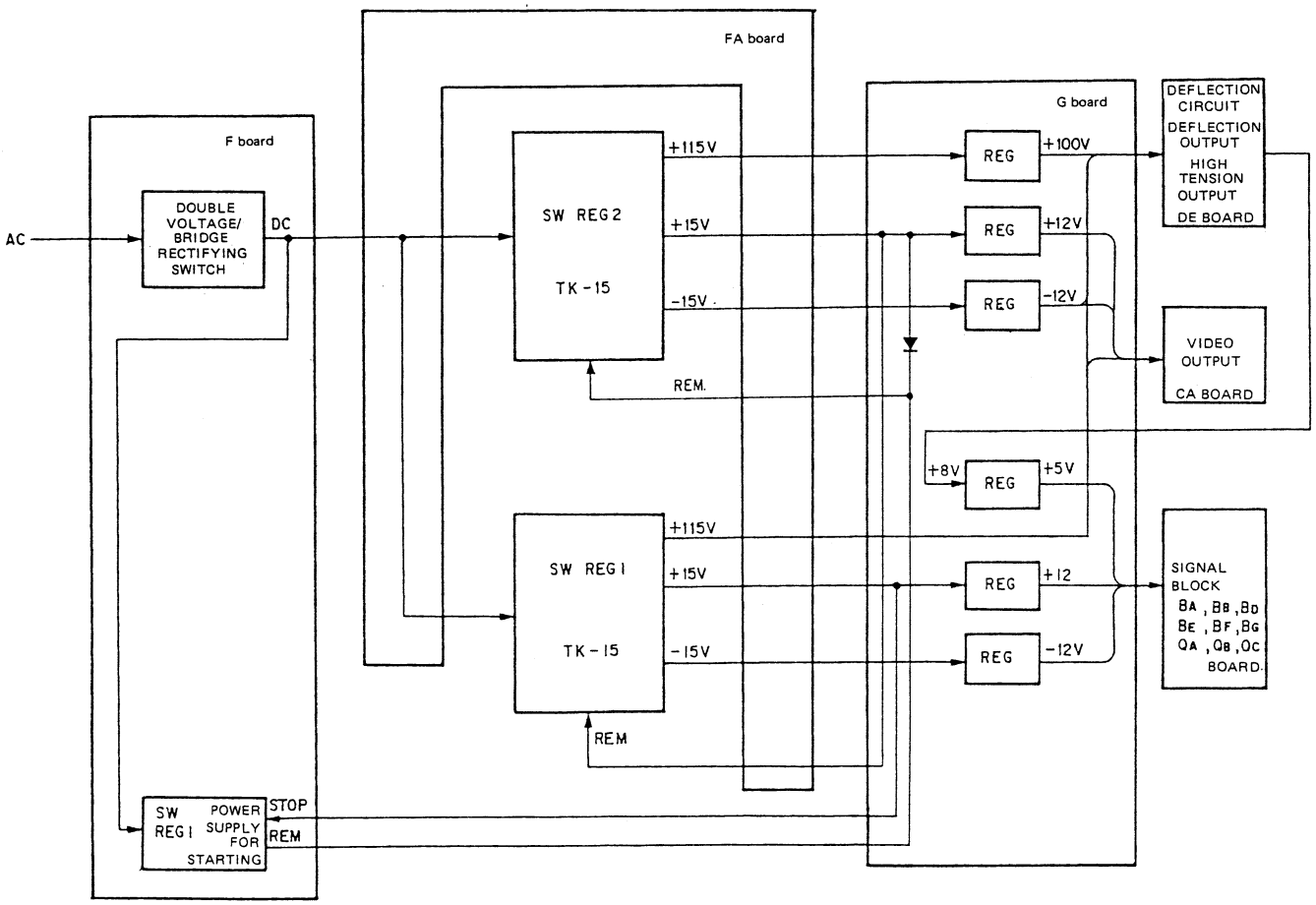
± 12V Power Supply (G Board)

± 12V power is distributed to respective boards after regulated to a stable voltage with three terminal regulators IC1, IC2, IC3 and IC4.

The circuit composed of Q101 to Q105 operates only during power on/off and secures the switching power supply by equalizing the load applied to each ± 15V line.

POWER SUPPLY

The power is supplied in the figure.


FA board
F board
G board
AC
DOUBLE VOLTAGE/ BRIDGE RECTIFYING SWITCH
DC
SW REG2
TK-15
+115V
+15V
-15V
REM.
SW REG1
TK-15
+115V
+15V
-15V
REM
REG
+100V
REG
+12V
REG
-12V
+8V
REG
+5V
REG
+12
REG
-12V
DEFLECTION CIRCUIT
DEFLECTION OUTPUT
HIGH TENSION OUTPUT
DE BOARD
VIDEO OUTPUT
CA BOARD
SIGNAL BLOCK
BA, BB, BD
BE, BF, BG
QA, QB, QC
BOARD.
SW REG1
POWER SUPPLY FOR STARTING
STOP
REM

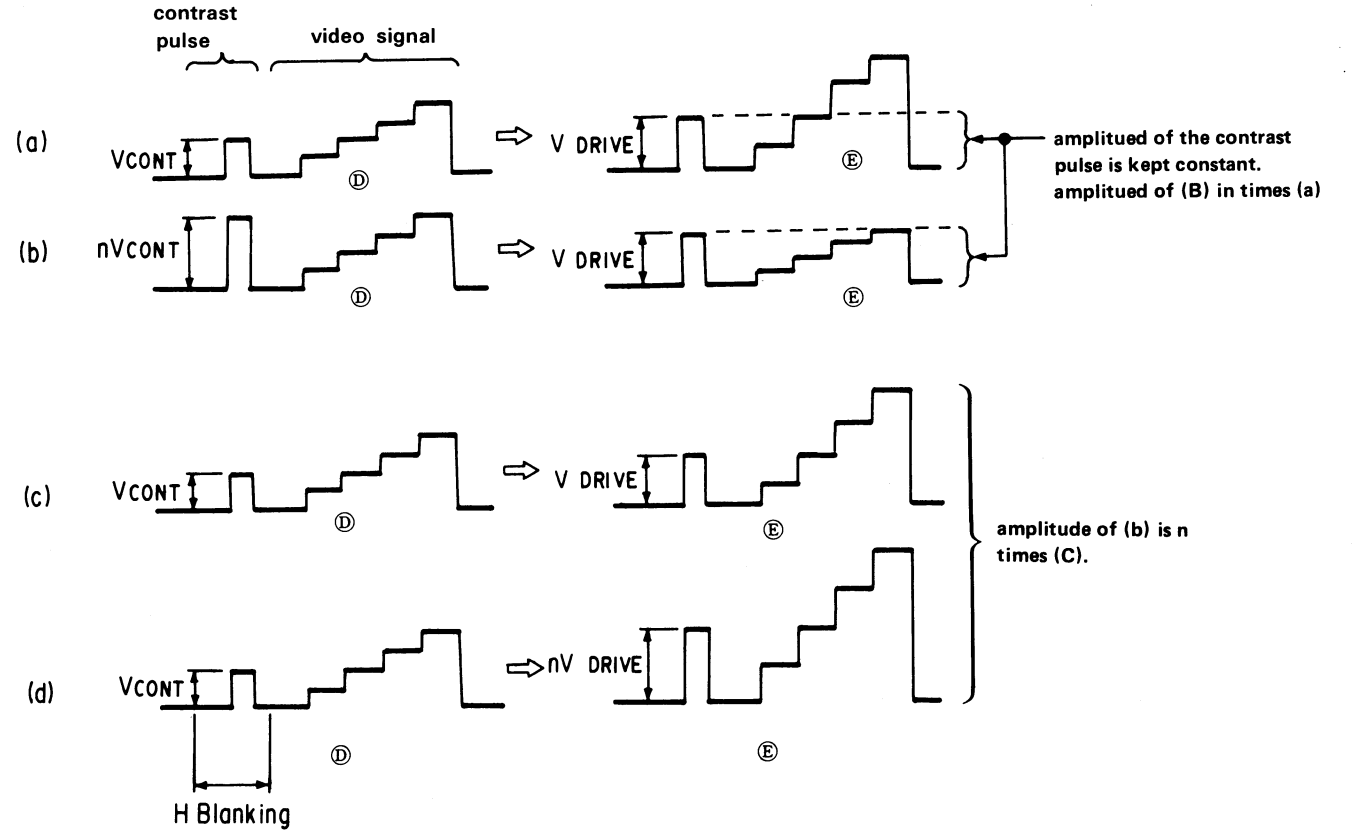
GAIN (Drive) and CONTRAST Control Circuit (B_G, B_D BOARD)

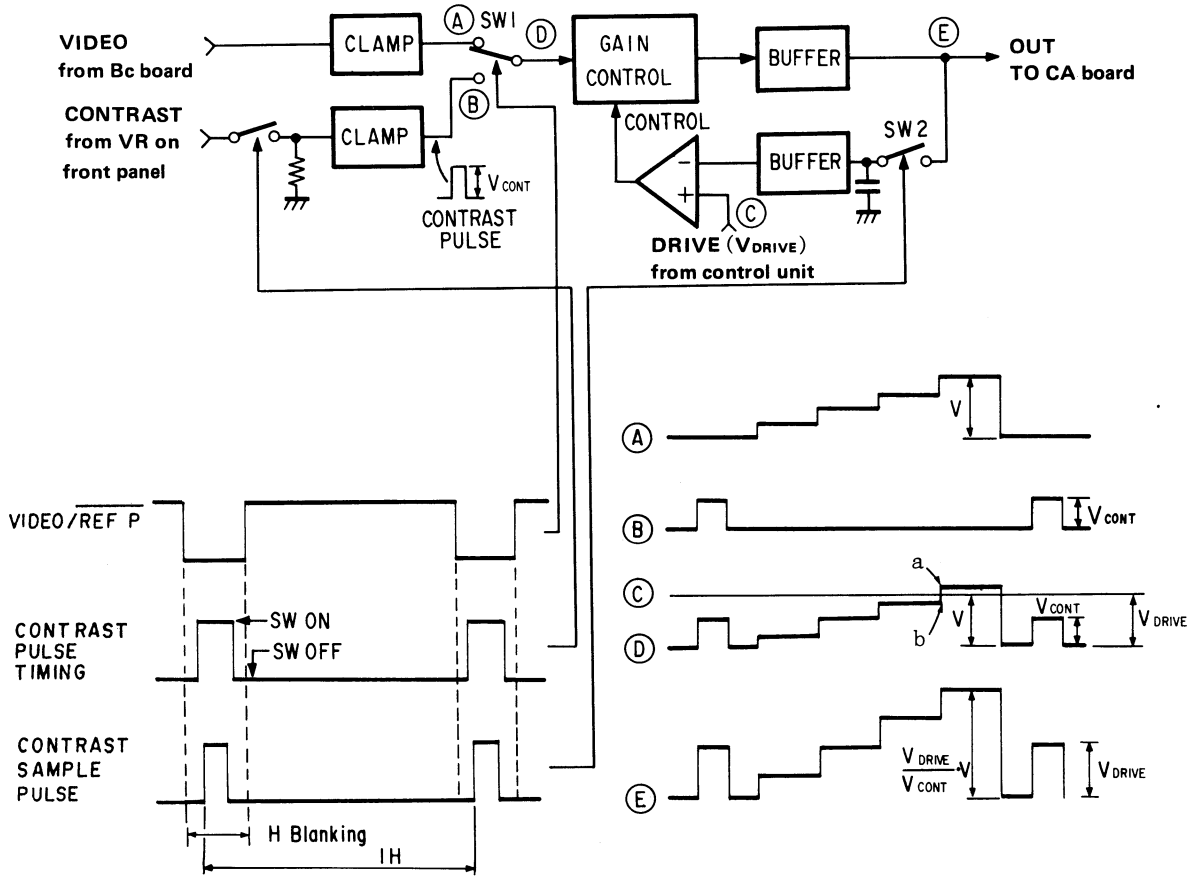
The Drive and the Contrast are controlled by the B_G board and the B_D board. Each circuit descriptions are discussed in latter section. Here the control method of the Drive and Contrast are discussed.

The Drive and the Contrast are controlled by the contrast pulse that is inserted during the horizontal blanking period. This method can remove the adverse effect of the amplifier gain's drift etc., that results in the contrast change and in the white peak's color temperature change. This constrast pulse is generated by the B_G board. Amplitude of the contrast pulse is determined by the front panel CONTRAST control. The contrast pulse is routed to the switch SW1 of the B_D board. This switch SW1 is operated in the timing as shown in the following illustration so that the contrast pulse is inserted in the horizontal blanking period. The switch SW1 outputs the video signal Ⓓ that has the contrast pulse inserted. This output signal is routed through the gain control buffer and then output to the C_A board. Amplitude of this output contrast pulse is sampled by the swtich SW2 and is then compared with the drive voltage V_{DRIVE} that is pre-set by the control unit located inside the drawer. The error voltage output from the comparator circuit becomes the control signal of the GAIN CONTROL. The gain control operation is performed until the contrast pulse amplitude is equal to that of the V_{DRIVE} signal. The gain is V_{DRIVE}, V_{CONT}. If either the V_{DRIVE} is multiplied by n times or the V_{CONT} is multiplied by (1/n), the output signal is multiplied by times n. The V_{CONT} is adjusted by the front panel CONTRAST control and the V_{DRIVE} is adjusted by the control unit.

The relationship between the input signal and the output signal (Ⓓand Ⓔin the block diagram) of the GAIN CONTROL, when the Contrast and the Drive are adjusted, is shown in the illustration.

The (a) and (b) show the case when the V_{CONT} is multiplied by n times while the V_{DRIVE} is kept constant. The (c) and (d) show the case when the V_{DRIVE} is multiplied by n times while the V_{CONT} is kept constant.


contrast pulse
video signal
(a)
VCONT
V DRIVE
amplitued of the contrast pulse is kept constant. amplitued of (B) in times (a)
(b)
nVCONT
V DRIVE
(c)
VCONT
V DRIVE
amplitude of (b) is n times (C).
(d)
VCONT
nV DRIVE
H Blanking


VIDEO from Bc board
CLAMP
SW1
GAIN CONTROL
BUFFER
OUT TO CA board
CONTRAST from VR on front panel
CLAMP
VCONT
CONTRAST PULSE
CONTROL
BUFFER
SW2
DRIVE (VDRIVE) from control unit
VIDEO/REF P
CONTRAST PULSE TIMING
SW ON
SW OFF
CONTRAST SAMPLE PULSE
H Blanking
1H
V
VCONT
a
b
VDRIVE
VDRIVE/VCONT

Bias and Bright Control Circuit (B_G, C_A BOARD)

The Bias and Bright control operations are performed in the B_G board and the C_A board. Respective circuit description is discussed later. Here the Bias and Bright control methods are described.

The Bias and Bright controls are performed by using the bright pulse that is inserted during the vertical blanking period, and finally by controlling the cathode current. This system of the bias and bright control circuit removes change in the black balance that is due to the temperature drift of circuits and CRT or due to change with elapsed time.

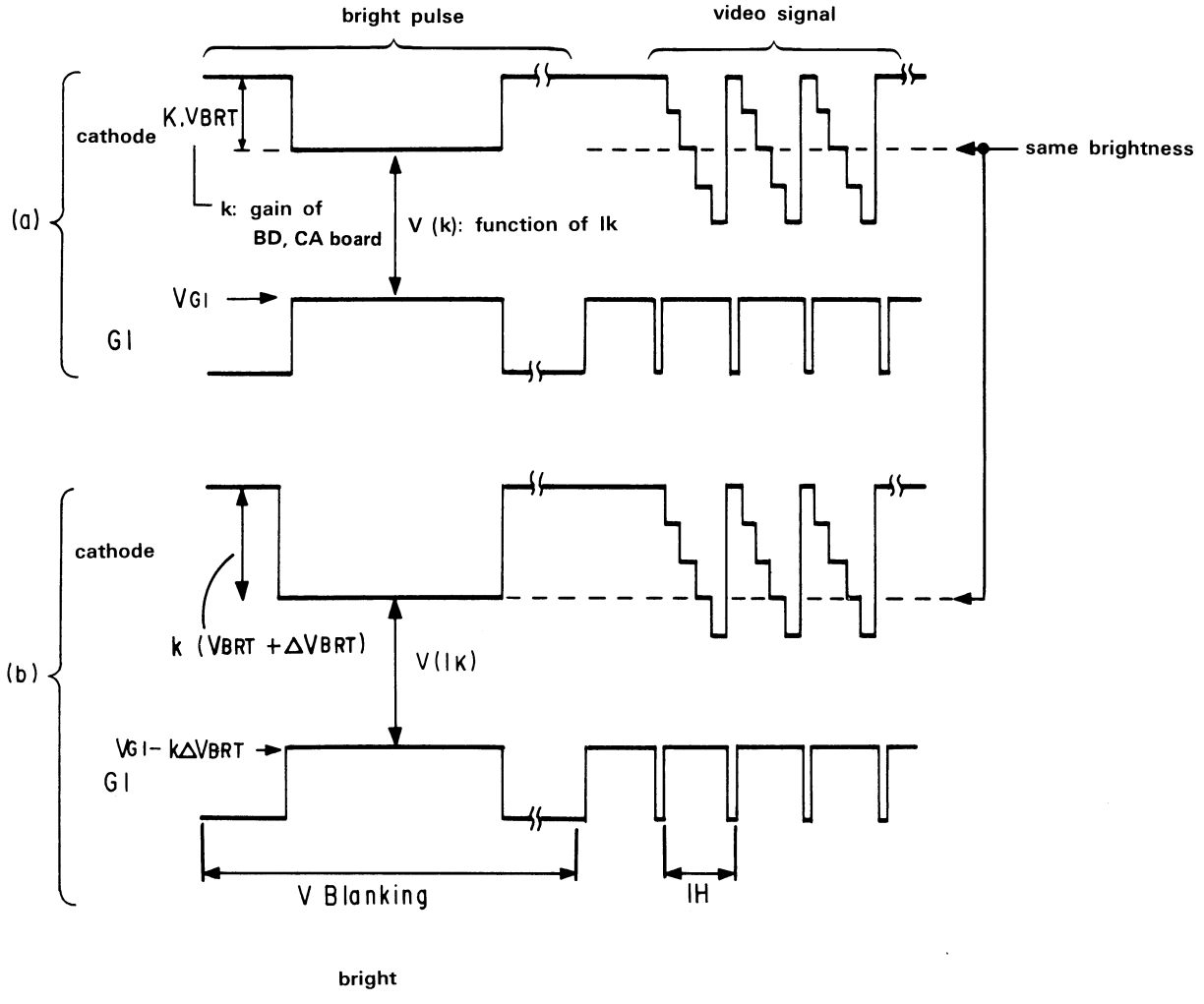
The bright pulse is generated in the B_G board. Amplitude of the bright pulse is determined by the front panel BRIGHT control. The bright pulse is mixtured with the contrast pulse, and then are input to the B_D board's switch SW1. The switch SW1 performs switching as shown in the following illustration so that the video signal with the bright pulse inserted in the vertical blanking period is output as Ⓓ in the illustration.

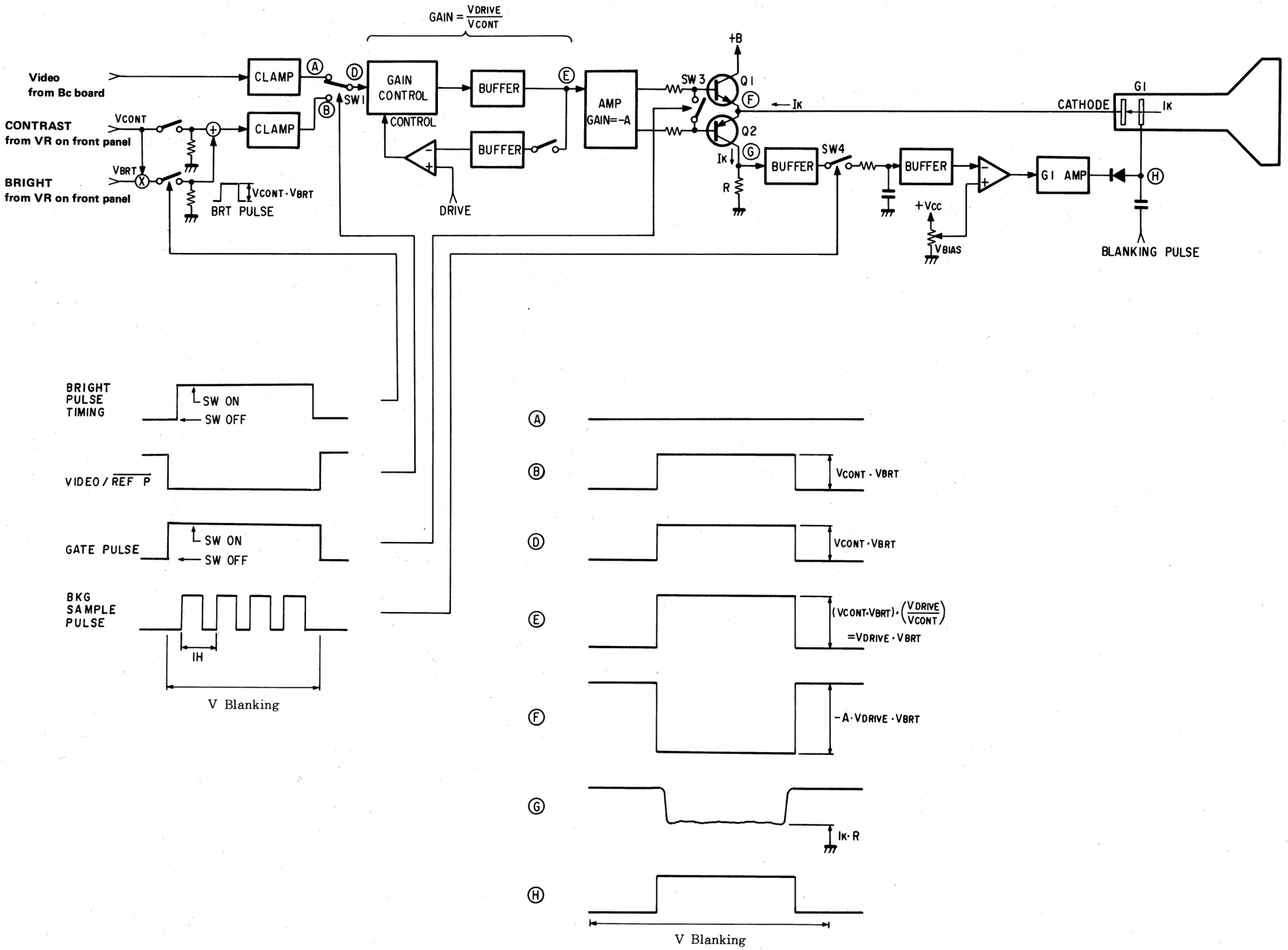
This video signal is buffered by the gain control buffer amplifier, and then output from Q1/Q2 that drive the CRT cathode. The switch SW3 is turned on during the bright pulse period. During the SW3 on period, Q1 is cut-off so that the cathode current Ik which is proportional to the bright pulse amplitude, flows through Q2 collector. This current Ik is converted by a resistor to voltage signal that is sample-held by the switch SW4. The voltage difference between this voltage (Ik.R) and the V_{BIAS} is amplified and sent to the CRT's G1 in order to control the Ik. When the (Ik.R)is bigger than V_{BIAS}, the G1 voltage decreases to reduce the Ik. This feedback loop operates in this manner until the stable state of $(Ik.R)=B_{BIAS}$ is established. As long as the B_{BIAS} is of constant value, the Ik which is the brightness of the CRT is kept constant.

Brightness of the CRT can be controlled by changing the amplitude of the bright pulse. As the front panel BRIGHT control is turned from B_{BRT} as shown in the following illustration to V_{BRT} + delta V_{BRT} as shown in b in the following illustration, the monitor screen is darkened.

The bias adjustment is done by changing the V (Ik).

(Since $Ik=V_{BIAS}/R$, the Ik can be controlled by V_{BIAS}.)




GAIN = VDRIVE / VCONT
Video
from Bc board
CONTRAST
from VR on front panel
BRIGHT
from VR on front panel
VCONT
VBRT
CLAMP
CLAMP
SW1
GAIN
CONTROL
CONTROL
BUFFER
BUFFER
AMP
GAIN=-A
DRIVE
BRT PULSE
VCONT·VBRT
+B
SW3
Q1
Q2
IK
R
BUFFER
SW4
BUFFER
+VCC
VBIAS
G1 AMP
CATHODE
G1
IK
BLANKING PULSE
BRIGHT
PULSE
TIMING
SW ON
SW OFF
VIDEO / REF P
GATE PULSE
SW ON
SW OFF
BKG
SAMPLE
PULSE
1H
V Blanking
A
B
VCONT · VBRT
D
VCONT · VBRT
E
(VCONT·VBRT)·(VDRIVE/VCONT)
=VDRIVE · VBRT
F
-A·VDRIVE·VBRT
G
IK·R
H
V Blanking

FLOATING TYPE INPUT BUFFER (Q_A, Q_B, Q_C BOARD)

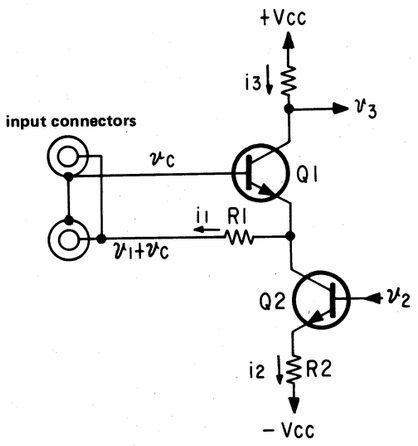
The captioned three circuit boards are connected to the BNC input connectors, having the input buffer function.
These three boards receives power supply from the B_A board. As input signal is selected by the INPUT A, B select switch, etc., the selected circuit board alone receives power supply while the other circuit boards receive no power as power is turned off by the input selector switch.

R, G, B, EXT SYNC channels' Input Buffer

The input buffer circuit comprises the input stage Q1, Q2, the cascode connected high gain amplifier Q3, Q4 and the emitter follower. The negative feedback is applied to form the wide band-width amplifier.

Input Stage

The input signal (v1+vc) is applied to Q1 emitter through R1 while the ground (vc) of the input signal is connected to Q1 base. This circuit configuration can remove the common mode noise of the input signal. The output signal (v2) from the output buffer is fed back to Q2 base. Gain is shown in the equation 1 .



$$i_1=\frac{v_C-(v_1+v_C)}{R_1}=-\frac{v_1}{R_1}$$

The voltage across R1 becomes V1.
(Vc is removed.)

$$i_2=\frac{v_C}{R_2}$$

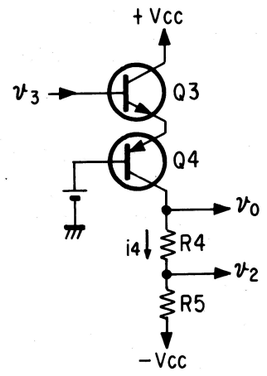
$$i_3=i_1+i_2$$

$$v_3=-i_3R_3$$

$$=\frac{R_3}{R_1}v_1-\frac{R_3}{R_2}v_2 \quad \cdots\cdots ①$$

High gain amplifier

The input signal v3 is input to Q3 base. Output is obtained from Q4 collector.
Gain of this stage is shown in equations ②, ③ .



If the emitter resistors of Q3, Q4 are "re",

$$re=\frac{kT}{q}\frac{1}{I_C}=\frac{26\times10^{-3}}{I_C}\ [\Omega]$$

$$i_4=\frac{v_3}{2re}$$

$$v_0=i_4(R_4+R_5)$$

$$=\frac{R_4+R_5}{2re}\cdot v_3 \quad \cdots\cdots ②$$

$$v_2=\frac{R_5}{2re}\ v_3 \quad \cdots\cdots ③$$

Output Buffer's total gain

The v2 and v3 are removed from the above calculated equations ①, ② , ③.

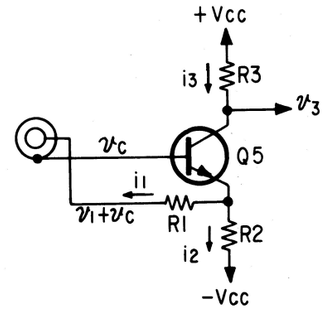
$$v_0=\frac{R_3}{R_1}\frac{R_4+R_5}{2re+\frac{R_3}{R_2}\cdot R_5}v_1$$

$$=\frac{R_2}{R_1}\left(1+\frac{R_4}{R_5}\right)\cdot v_1 \quad \left(\because 2re\ll\frac{R_3}{R_2}\cdot R_5\right)$$

Since R1=13 kohms, R2=4.7 kohms, R4=2.2 kohms and R5=1 kohms, the gain is unity (=1) gain.

HD, and VD channels' Input Buffer

The input buffer consists of the input stage Q5 and an emitter follower.
Following is the description on the input stage.



$$i_1=\frac{v_C-(v_1+v_C)}{R_1}=-\frac{v_1}{R_1}$$

$$i_2=\frac{v_C}{R_2}$$

$$i_3=i_1+i_2$$

$$v_3=-i_3R_3$$

$$=\frac{R_3}{R_1}v_1-\frac{R_3}{R_2}v_C$$

$$=\frac{R_3}{R_1}v_1 \quad (\because R_3\ll R_2)$$

Since R1=680 ohms and R2=1.5 kohms, the gain is 2.2 times.

INPUT SIGNAL SELECTION (B_A BOARD)

The B_A board has function of selecting the input signal and also the power supply control for Q_A, Q_B, and Q_C boards.
The A-channel video signals (R/C_W, G/Y, and B/C_N) from the Q_A board and the B-channel video signals (ditto) from the Q_B board are input to IC101/IC102/IC103 (LA7016) where either A-channel or B-channel is selected. The selected output video signal from these switching ICs, is buffered by Q101, Q102, Q103, is output from the B_A board and is input to the B_B board.
The EXT SYNC input is at the same time routed from the Q_C board, is fed to the one input of the video switch IC202, while the other input of this video switch IC202 is receiving the G/Y signal from Q102. Selection of either SYNC INT/EXT is performed by this video switch IC202. The selected output sync signal is buffered by Q203, and is input to the B_F board (SYNC PROCESS).
The HD and VD signals from Q_C board are clamped by D201/D203, buffered by Q201/Q202 and are input to the B_F board.

Power Supply Circuit for Q_A, Q_B, and Q_C Boards

The power supply circuit for Q_A board is composed by IC305/Q301/Q302. The power supply circuit for Q_B board is composed by IC306/Q303/Q304. The power supply circuit for Q_C board is composed by IC307/Q306/Q307. The original power suppy the these respective power supplies, is the ±9V tracking power supply whose output can be turned OFF by grounding the IC's ⑧ pin. Therefore the B-channel power can be turned off while the A-channel is selected. The A-channel power can also be turned off while the B-channel is selected in the same manner. When the internal TEST signal is selected. all the power supplies to Q_A, Q_B, and Q_C boards are turned off.

YPBPR SIGNAL PROCESS, AND GBR APERTURE CONTROL CIRCUIT (BB BOARD)

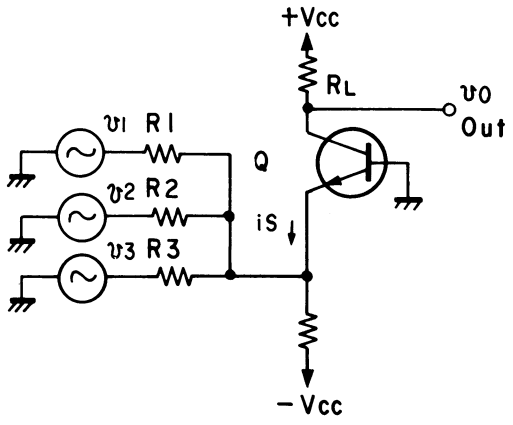
GBR/YPBPR selection, YPBPR to GBR conversion, and aperture control.
Major circuit blocks are the YPBPR signal process circuit and the GBR aperture control circuit.
IC6, IC7, IC8 (LA7016) are the GBR/YPBPR select switch. When YPBPR input is selected, input signals are routed through the YPBPR signal process circuits and are then input to the GBR aperture control circuit. When the GBR input is selected, input signals are directly applied to the GBR aperture control circuit. When YPBPR input is selected, the YPBPR signals are fed to the analog switches of IC1, IC3 that is the switch in order to separate the PR and the PB signals in the B&W mode. The Y signal is input to the analog switch of IC2 that is the selection switch of either internal TEST signal or the Y signal. Therefore, the TEST signal is input to the Y signal circuit in the YPBPR signal process circuit in place of the Y signal. These YPBPR signals are passed through respective analog switches and then fed to the YCWCN to GBR conversion matrix circuit. Its output GBR signals are fed to the selector switches of IC6, IC7, IC8 ⑦ pins where either the matrix output GBR or the direct input GBR are selected. The output signals are routed to the GBR aperture control circuits and to the COLOR/B&W select switches, and then fed to the output.

YPBPR to GBR Conversion Matrix Circuit

This conversion is performed in order to realize the following equations.

$$\begin{pmatrix} G \\ B \\ R \end{pmatrix} = \begin{pmatrix} 1 & -0.226 & -0.477 \\ 1 & 1.826 & 0 \\ 1 & 0 & 1.576 \end{pmatrix} \begin{pmatrix} Y \\ P_B \\ P_R \end{pmatrix} \quad \cdots ①$$

This conversion requires the addition of the video signals. The video signal adding is performed by the following circuit.



Now the video signals v1, v2, v3 are respectively multiplied by the coefficients K1, K2, K3, and are added together. That is:

$$v_O = K1v1 + K2v2 + K3v3 \cdots ②$$

The equation mentioned above can be obtained.
Assuming that the emitter resistence "Re" of the transistor "Q" whose base has been grounded in the Fig. is exceedingly small as with R1, R2, and R3, the signal current "is" which flows to the emitter of "Q".

$$i_S = \frac{v1}{R1} + \frac{v2}{R2} + \frac{v3}{R3} \cdots ③$$

If hfe of the transistor Q is high enough, approximately the "is" CURRENT FLOWS IN THE Q's collector. So, output from the collector is the voltage "vo":

$$v_O = R_L i_S = \frac{R_L}{R1} v1 + \frac{R_L}{R2} v2 + \frac{R_L}{R3} v3 \cdots\cdots ④$$

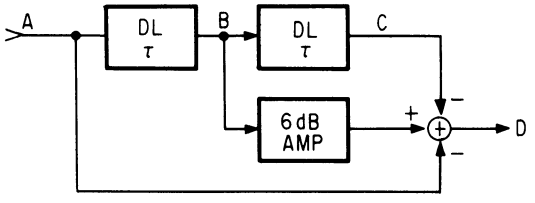
Therefore the above described coefficients are:

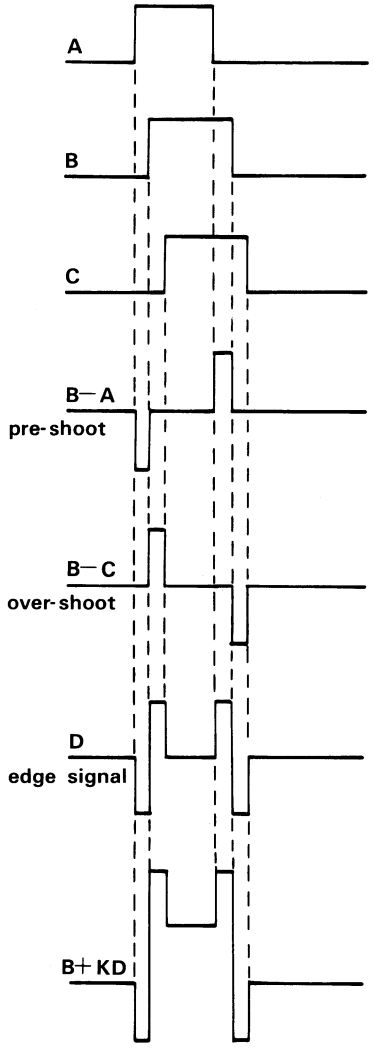
$$K1 = \frac{R_L}{R1}, \quad K2 = \frac{R_L}{R2}, \quad K3 = \frac{R_L}{R3} \cdots\cdots ⑤$$

Followings are the description using the actual circuit. The PB signal is buffered by Q1, Q2, the Y signal is buffered by Q9, Q10 and the CN signal is buffered by Q17/Q18 respectively and are routed to the matrix circuits. Since the PB signal and the PR signals are having negative coefficient as shown in equation 1, polarity inversion is needed. The polarity inversion is performed by IC4 and IC5 (BX1190). The matrix is performed by Q3, Q11, Q19. The matrix output GBR signals at respective collectors are routed to the emitter followers of Q4, Q12, Q20, then to the level shift of D6, D12, D15, and are finally output.

Aperture Control Circuit

This circuit is adding pre-shoot and over-shoot to edge signal of the video image. Therefore, edge signal is emphasized by this circuit. This circuit uses delay lines in order to generate the edge signal by addtion/subtraction operation among the delay line output signals. The output edge signal is then added to the original video signal. Its operating principle is shown in the following illustration. The signal A is the original video signal. The signal B is the delayed video signal where the signal A is delayed by "τ" to make the signal B. The signal C is the further delayd signal where the signal B is again delayed by "τ" to make the signal C. The pre-shoot signal is made by B−A subtraction. The over-shoot signal is made by B−C subtraction. The pre-shoot and the over-shoot are added to make the edge signal of 2B−(A+C) is obtained. Amplitude of this edge signal is adjusted and is added to the video signal B. Then the edge-corrected video signal is obtained. This is the fundamental idea of the aperture control operation.





Frequency response of this aperture correction circuit is obtained as follows. When the sinusodial wave signal (Esin2πft) is input,

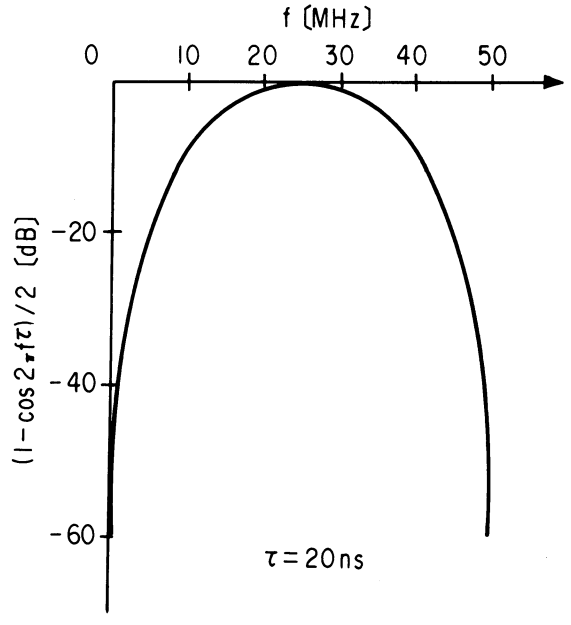
$$D=-E\sin 2\pi ft=2E\sin 2\pi f(t-\tau)-E\sin 2\pi f(t-2\tau)$$
$$=2E(1-\cos 2\pi f\tau)\sin 2\pi f(t-\tau)$$

Therefore the output is the delayed signal of the input signal by "τ", having the gain of 2E (1−cos2πfτ).
The frequency whereby the gain becomes maximum is written into the following equation,

$$\cos 2\pi f\tau=-1$$

from the above, it becomes $f=\frac{1}{2\tau}$

Since the delay line of τ=20 ns is used, it becomes a 25 MHz MAX aperture circuit.
The frequency response of D is shown in Fig. below.



The aperture control circuit in the B_B board is to generate the edge correction signal for the **G, B, R** signals. The method to generate the edge signal is as follows. Y signal is first generated from the **GBR** signals by matrixing them. The Y signal is fed to the edge signal generating circuit where the edge signal is generated for the Y signal. This edge signal is gain-controlled and is distributed to respective **G, B, R** signals.
Following is the circuit description referring actual circuit. The resistor matrix network is located in the emitter circuit of the common-base transistor Q25. As the kRGB signals are fed to this matrix network, the Y output signal is output from Q25 collector. This Y signal output is passed through emitter follower Q26, level shifter D19, and is output from emitter follower Q27. This Y signal output is again buffered by Q28, 20ns delayed by the delay line DL4. It is again buffered by Q29/Q30 and 20ns delayed by DL5.

The afore-mentioned A, B, C signals are thus generated. Addition and subtraction of these three A, B, C signals are performed by Q36. The output is obtained from Q36 collector in the form of electric current. This current output is routed to differential amplifier of Q32, Q33 common emitter circuit so that the amplification gain controlled by the voltage difference between the bases of Q32 and Q33. Its output is taken from Q33 collector, amplified by Q34, buffered by emitter follower Q35. This edge signal output is added to the G, B, R signals respectively. The B&W signal for use in the B&W mode is also obtained from the emitter of Q30 in this circuit. Since edge signal generation and its gain controlling circuit provide some delay, the Y signal is delayed by the delay line DL6, and is sent to the COLOR/B&W select switch IC9, IC10, IC11 (LA7016).

The G, B, R signals are at the same time, delayed by the delay lines DL1, DL2, DL3 respectively. These delay lines have the equivalent delay time as that of DL4 + DL6 respectively. The delayed G, B, R signals are applied to the COLOR/B&W select switch where the select switch output and the afore-mentioned gain-controlled edge signal are mixed in the emitter circuits of the common base mixers Q7, Q15 and Q23. The mixed outputs are obtained from their collectors, buffered by Q8, Q16, Q24, and level-shifted by D10, D14, D17 and are output.

This is the aperture control for the RGB signals.

CONTRAST AND GAIN (DRIVE) CONTROL CIRCUIT (B_D) BOARD

Following is the discussion regarding R channel only. The Grand B channels operates in exactly same manner.

Back Porch Clamp Circuit

This circuit is composed of Q101 through Q105 which is amplifier with the dc level-shift function. Gain is obtained as the following equation.

$$\frac{R107}{R103//R104} \cdot \frac{R111}{R109}$$

Gain is approximately 1.4 times.

The DC level shift can be done by adding any DC signal to Q104 base.

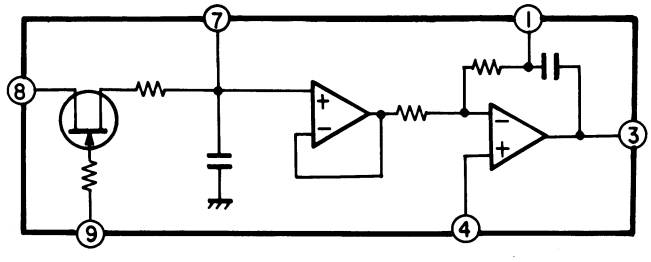
IC101 is a comparator as shown in the following illustration, which is the SONY BX-1313 type comparator equipped with a sample-and-hold circuit. Input signal is feed to pin-⑧ which is sampled as long as the sampling pulse at pin-⑨ is HIGH. The sampled voltage is held at pin-⑦ until next sampling pulse is input.

The sampled voltage at pin-⑦ is compared with the reference voltage input Vref signal at pin-④. If the V is higher than Vref, the LOW level is output. If the V is lower than Vref, HIGH level is output.

This IC101 functions as a clamp circuit too. If a back porch clamp pulse is input to the pin-⑨, and if pin-③ is connected to Q104 base, then the Q105 emitter output's back porch is clamped to the Vref level. the Vref signal and the back porch clamp pulse are sent from the B_G board. During the Delay mode operation, the Vref is increased and the pedestal level is also increased.

The capacitor C107 is determining the calmp time constant.

approximate circuit diagram of IC101 (BX-1313)



VIDEO/REFERENCE PULSE Select Switch

IC102 (LA7016) is the analog switch that receives the clamped video signal input to pin-② while the clamped reference pulse is input to pin-⑦. The reference pulse is the mixtured pulse of the bright pulse and the contrast pulse at the B_G board. Its pin-③ is receiving the selection control signal for this analog switch. By this pin-③ signal, the switch is set to the pin-⑦ as long as the reference pulse is present. Therefore, the video signal with the reference pulse inserted, is output from the IC102 pin-④.

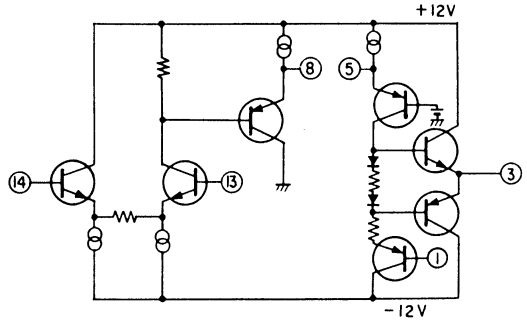
RGB ON/OFF Circuit

When the control unit's RGB ON/OFF switch selects the OFF position, cathode receives no signal and the G1 potential is also decreased. The G1 potential is controlled by CA board. This OFF signal of the RGB ON/OFF switch removes the video signal at the BD board as this signal is input to Q108 base. For example, If this switch is set to the R OFF position, Q108 is turned ON that put IC102-③ pin LOW to connect the IC102 input to the ⑦ -pin so that the video signal at ② -pin is not output.

CONTRAST/GAIN Control Circuit and Pedestal Clamp Circuit

IC103, IC104, IC106, IC107 are constituting the CONTRAST/ IN control circuit and the pedestal clamp circuit.
The IC103 is a differential amplifier having the capability of DC level shift. If a variable resistor is connected between pin-⑤ and pin-⑧, the gain control becomes possible. If the pin-①'s DC level is changed, the level shift becomes possible.

IC103 (BX-1315) equivalent circuit



IC104 is used as a variable resistor connected in between pin-⑤ and pin-⑧. IC104 is a voltage-controlled variable resistor where V4, V6 are the control voltages. The resistance value (taken as R13) between pin-① and pin-③ can be changed by varying the voltages of V1-V6 and V3-V4. (V1-V6 is the potential of pin ① - pin ⑥.) V4 is controlled by the CONTRAST control and the GAIN control.
C119 is used to modulate the V6 with V1 until V1−V6= V3−V4=dc.
If C119 does not exist, V1-V6=ac is established so that R13 is modulated by V1, that results in waveform distortion.
Q106 is installed so that IC104-⑥ pin can follow the -④ pin change when the -④ pin voltage is changed.
Q106 is turned on during the blanking period.
IC106 samples the CONTRAST pulse and is controlling the resistance value of IC104. It receives the Contrast pulse's sampling pulse at pin-⑨ that has the same timing as the CONTRAST pulse. It receives the video signal with the CONTRAST pulse inserted, at pin-⑧ so that it samples and holds the CONTRAST pulse's "level V". The sampled "level V" is compared with the reference voltage "Vref" that is input at pin-④. If the level V is higher than Vref, the LOW level is output. If the level V is lower than Vref, the HIGH level is output from pin-③. This output is routed to Q107 base, inverted by Q107 collector, and is input to IC104-④ pin. Therefore, If level V is higher than Vref, the IC104-④ pin becomes HIGH level that increases the IC104 resistance value that decreases IC103 gain to make the level V lower until level V = Vref is established. Thus, the CONTRAST pulse has feed-back loop so that it maintains the constant amplitude even though IC103, IC104, IC105 have drift.
IC106 is the pedestal clamp IC. Its operation is same as that of afore-mentioned IC101 clamp circuit.

Buffer Amplifier

IC105 is the video amplifier having approximately 30 times open-loop gain. It outputs signal to the CA board with 75 ohms.

INTERNAL SIGNAL GENERATORS (BE BOARD)

Clock Oscillator : X1, IC1(4A), IC2(4B)

Approximate 48 MHZ is oscillated by IC1(4A), IC2(4B). It is divided by 4 with IC2(4B) to obtain apprximate 12 MHz that is the system clock.

Horizontal rate signal generator : IC3(2C), IC4(3C), IC5(4C), IC6(3D), IC7(3E)

IC3, IC4, IC5 are the hexadecimal dividers that generates the 9 bit digital data (from 0 to 362 count at 1H) that is supplied to IC6 as the address data. The timing data of eight signals such as 2fH, H.SYNC, B1, H.HATCH, G1, G2, LATCH CLK, and CLEAR are memorized and located in IC6. The memory page is switched by the system A and B signals input to pins-㉕ and -㉖ of BE-1, selecting one among four timings.

Vertical Rate Signal Generator : IC8(1F), IC9(2F), IC10(2E), IC11(1E), IC12(1J), IC13(2J)

The 2fH signal is used as the clock pulse that is divided by 1125 times. As the timing is determined by the clock input, the vertical rate signals such as V.SYNC, B2, V.SYNC', V.HATCH, G3, G4, G5, and CLEAR are output. G3, G4, G5 are latched by the H. SYNC signal.

H. and V. Pattern Signal Generator : IC15(1E), IC16(1D), IC17(1C), Q7

The signals such as B1, G1, G2, B2, G3, G4, G5, CONT-A/CONT-B are input and are used to determine the output video signal amplitude and generat the video signals such as "SET UP", "FLAT FIELD" and "GRY SCALE". The video signal amplitude (D/A convertor) is determined by the constance current source Q7, resistor array and open collector array.

HATCH Signal Generator : IC21(2D), IC23-¼ (3J-¼), Q6

The H.HATCH signal is determined to have approximate 35ns pulse width by R15, C15 that is mixed with the V. HATCH signal. The mixed signals are sent to Q6 base. If the HATCH signal is selected to be output, the FLAT FIELD is also automatically selected so that these two signals are mixed by Q6 to generate the HATCH signal.

SYNC Signal Generator

Receiving the afore-mentioned H.SYNC, V.SYNC, and V.SYNC" timing signals, the specified output signals of H.SYNC, V.SYNC, and COMPOSITE SYNC are generated.
The H.SYNC and V.SYNC signals are output by the invertor/ open collector to be pulled up the ⊕power supply. The COMP SYNC is output through buffers Q8 and Q9.

Video Buffer : Q4, Q5

The afore-mentioned H.V pattern signal and the hatch signals are output through Q4, Q5 with 75 ohms.

Invertor, Dot Signal Generator and Brightness Control: IC23(3J), IC24(4H), IC25(4G), IC26(4F)

As receiving the external command input, brightness control of the output video signal, invertion of the hatch signal, generation of the dot signal are performed.
When the external command input is OPEN, all operations are set to NORMAL.

Generation of the PLUGE Signal (IC27, Q14 and Q15)

The PLUGE signal is superposed to the video signal generated by IC17 and output. When the PLUGE signal is set, the black signal data is output from IC17. When the PLUGE signal is not set, its output is inhibited by the signal from ④-pin of BE-14.

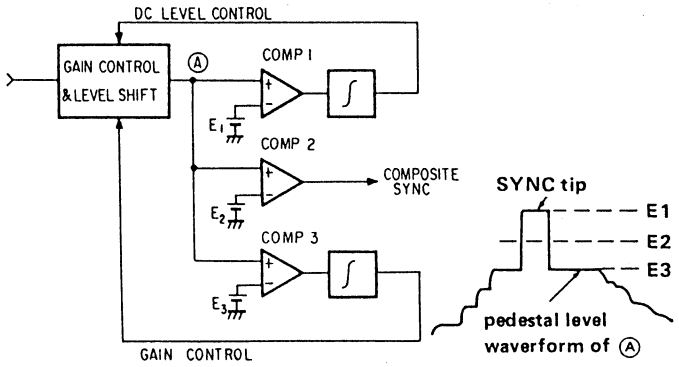
INPUT/TEST Control : Q1 through Q3

When external command input is input that enables external video input is allowed or TEST signal is allowed, the +5V power line is turned off. It is because that the external input video signal and the internally generated signal from the BE board will not make interference each other.

SYNC PROCESS CIRCUIT (BF BOARD)

Sync Separator Circuit having Sync AGC Function

In order to establish the AGC circuit using input sync signal as the reference signal, an amplifier that can detect and control the amplification gain and dc level is necessary.
Fundamental circuit is shown in the following illustration.
The sync signal is amplified by the GAIN CONTROL & LEVEL SHIFT amplifier that provides the inverted output to each of the comparators of COMP-1, -2, -3. The comparator COMP-1 provides output so that the sync tip's dc level becomes E1 as shown in the illustration. The other comparator COMP-3 provides the GAIN CONTROL signal so that the output pedestal portion has the E3 level. These control signals are fed back to the GAIN CONTROL & LEVEL SHIFT amplifier so that the comparator COMP-2 provides the composite sync signal having the specified sync amplitude and dc level.



The GAIN CONTROL & LEVEL SHIFT circuit is consisted by the IC102, Q108, Q109 and Q110. The gain control is done by IC102 MC1496 double balanced type differential amplifier. Its output is the current output that is input to Q108 common base amplifier's emitter.
It is fed then to Q109 common emitter amplifier where output is taken from its collector and sent to Q108 emitter through R141 for negative feed back.
Its output is buffered by Q110 emitter follower.
The DC level control is performed by changing the DC current flowing into Q108 emitter.
In this SYNC AGC circuit, the SYNC tip is fixed by the DC level control while the pedestal level is determined by the gain control. The output signal from Q110 emitter is input to Q111 comparator where signal is integrated with shorter time constant in order to react to the SYNC tip. The signal is feed back by Q112 and Q113 emitter follower in order to clamp the sync tip potential to the Q111 base potential. This integrator has the shorter time constant for sync period while it is designed to have longer time constant for video period by D102, R158 in order to hold the sampled value during the video period.
The output signal from Q110 emitter is sent to Q115 comparator that is the integrator to react only to the pedestal portion, not to the SYNC portion, by having the long time constant. The signal is then feed back by Q117 emitter follower in order to clamp the pedestal level to the Q115 base potential by determining the gain control factor.
The SYNC top level and the pedestal level is thus fixed so that the SYNC signal amplitude is always constant. This signal is sent to Q115 comparator where sync signal alone is separated that is amplified by Q114, and output through complementary buffers of Q119 and Q120. The negative polarity sync is thus output.

Equalizing Pulse Extractor Circuit

IC104 (2/2) is an equalizing-pulse sampling circuit. A pulse with a amplitude approx. 3/4H is generated by the IC104 built-in monostable multivibrator, then its inverted output (IC104-⑨ pin) is fed back into the input IC104-⑪ pin, sampling the input equalizing pulse by masking it.

Back Porch Clamp Pulse Generator Circuit

IC103, IC203, IC204, IC205, Q201, Q202 and Q203 compose a back-porch clamp pulse generator circuit. During HD input, the monostable multivibrators inside IC103 and IC203 delay the phase, and a negative polarity back-porch clamp pulse is output from IC203-⑨ pin. During INT SYNC or EXT SYNC input, a similar pulse is output from IC204-⑨ pin. The clamp pulse is selected at IC205, and it undergoes polarity inversion and waveform shaping at Q201. The resulting positive polarity back-porch clamp pulse is then output from the complementary buffer composed of Q202 and Q203.
The control signal for the selector IC205 is sent from the sync signal detector circuit composed of IC205, IC206 and IC204. Even when the HD signal is being input, the clamp pulse is generated from the sync signal if it is output from the sync separator circuit.

V Sync Selector Circuit

Q304, Q305, Q306, IC201 (2/4) and IC301 compose a V sync switching circuit. IC301 switches between the HD, composite sync and test V sync signals.

H. SYNC Selector Circuit

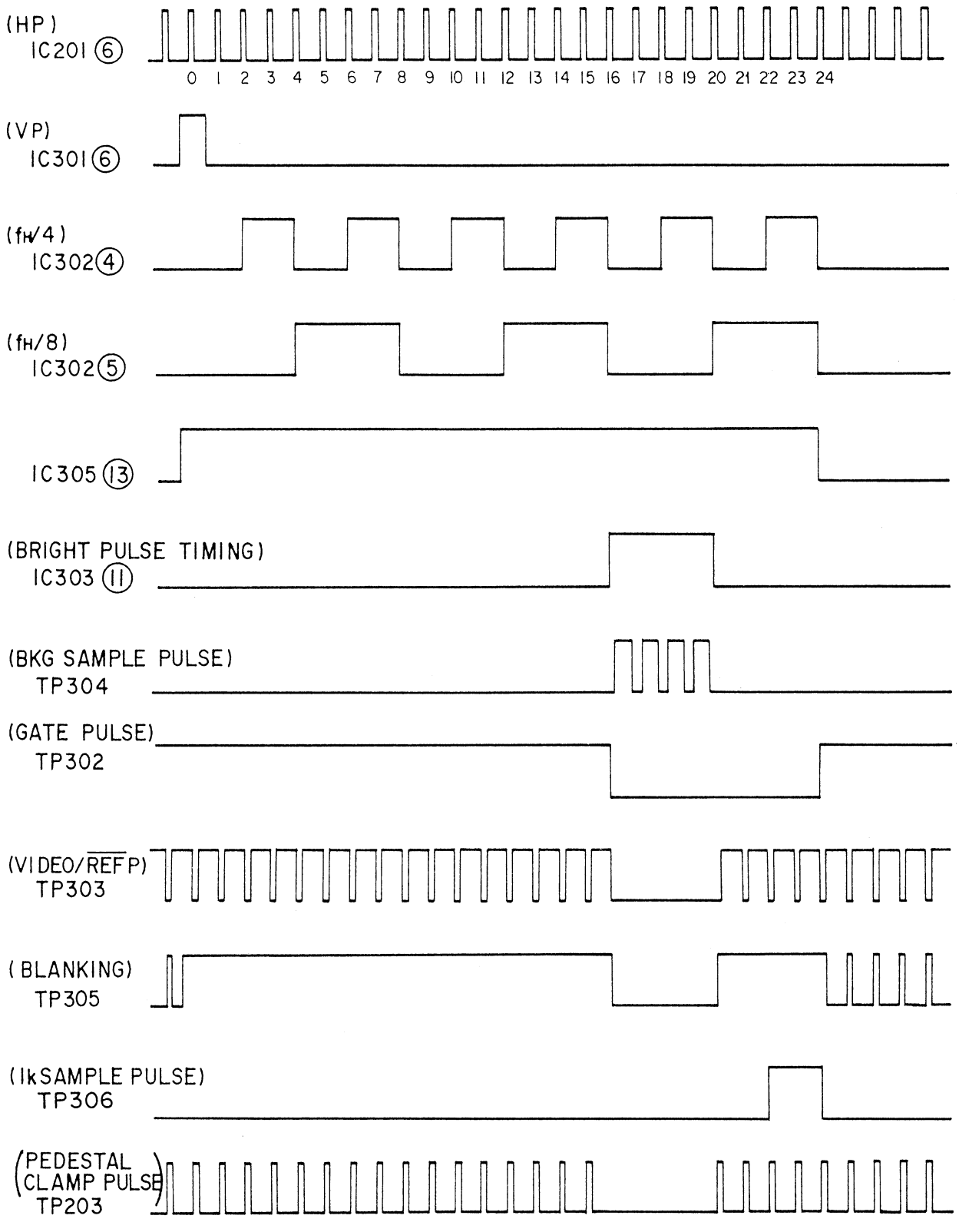
IC105 is a H sync switching circuit. It outputs the HD signal when it is input, and the composite sync signal when it is not.

PULSE GENERATOR (BG BOARD)

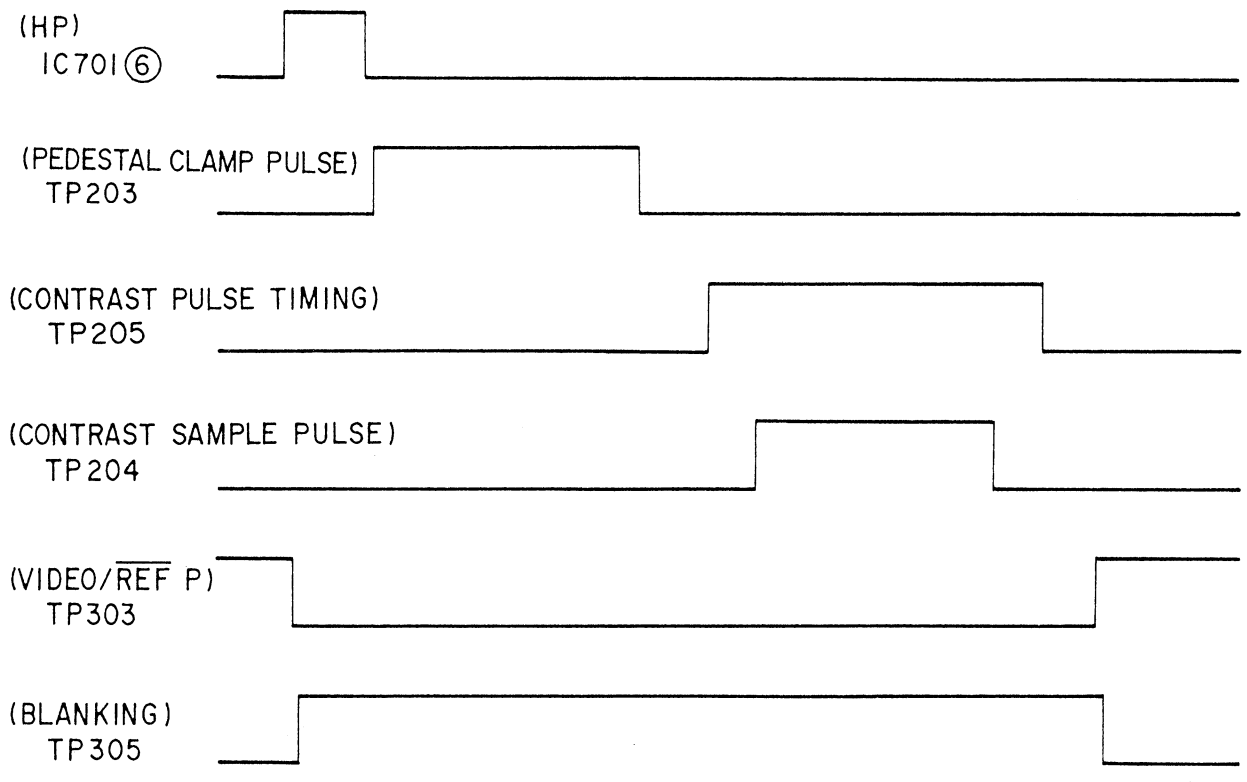
Pulse Generator Circuit to generate BRIGHT Pulse

Timing Generator Circuit for Brightness Pulse and Related Pulses
The brightness pulse, BKG sample pulse, gate pulse and video/REFP pulse used by the previously explained (3-14) bias and brightness control circuit are generated at this circuit.
The timing of these pulses is as shown on fallowing the timing chart.
The H and V pulses generated at the deflection circuit (D board) are input to the CLK and CLR terminals of the counter composed of IC304 and IC305 to produce these pulses.

BG BOARD TIMING CHART 1/2 (V BLANKING PERIOD)



BG BOARD TIMING CHART 2/2 (H BLANKING PERIOD)



Timing Generator Circuit for Contrast Pulse and Related Pulses

The contrast pulse and contrast sample pulse used by the previously explained (3-12) gain and contrast control circuit are generated at this circuit.
The timing of these pulses is as shown on the following timing chart, They are generated from the H pulse generated at the deflection circuit (D board).

Reference Pulse Generator Circuit

The reference pulse is a combination of the brightness and contrast pulses. This pulse is superposed to the video signal at the BD board, then it is used at the bias and gain control circuit and the gain and contrast control circuit.
The brightness pulse amplitude can be changed with the brightness control on the front panel, and the contrast pulse amplitude with the contrast control.
Brightness and contrast control voltages are finally sent to the buffer inside IC102, and sampled by the above-mentioned brightness timing and contrast timing pulses at IC105 to become the brightness and contrast pulses.
These pulses are added by the adder composed of Q110 to Q113.
The resulting pulse is clamped at the clamp circuit including Q115 to Q117 and IC103, then output as the reference pulse.

Delay Control Circuit

In the delay mode, this circuit increases contrast pulse amplitude and decreases brightness pulse amplitude. This results in less contrast and more brightness.
Clamp voltage of the BD board is also changed.

ABL Circuit

Q101 to Q104 compose a contrast ABL circuit.
It increases contrast pulse amplitude in case of a large ABL current.

VIDEO OUTPUT (CA board)

Since R, G, B, have the exactly equivalent circuits, the R channel alone is discussed.

Pre-amplifier

This circuit consists of differential amplifier and the same phase as input is output.
The gain of this amplifier is as follows.
R7/R4 = approx. × 2

VIDEO OUTPUT Circuit

This is a general cascode amplifier. Q2 is a bias circuit for buffers in the next stage and Q23 is DC current source for adjusting pedestal level bias of the video signal.
The gain of this amplifier as follows.
R18/R16+R24=approx. × 30

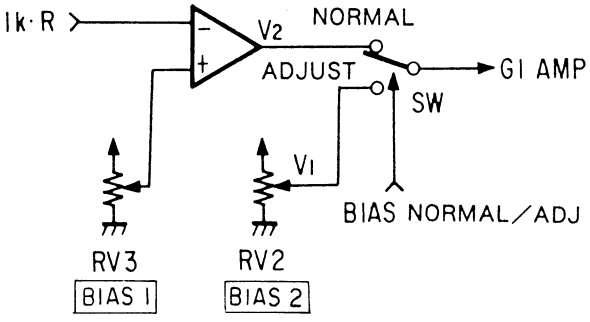
Q14, Q15 are the buffer amplifiers whose output is sent to CRT cathode via CB board.
Q10 through Q12 circuit is to cut-off Q14.
As Q13 base is set to LOW level, Q10 through Q12 are turned on to cut off Q14. Then Q15 collector current becomes the cathode current flowing from CA-9 terminal. The resistor R35 is installed in Q15 collector that detects the cathode current.
The gate pulse that turns on/off Q13 is supplied from BG board. This pulse has the same timing with the BRIGHT pulse. The resistor R35 detects the cathode current when the BRIGHT pulse is sent to cathode.

Blanking Circuit

G, B, R channels are controlling their respective G1 voltage independently.
The blanking pulse is sent from the deflection circuit and is waveshaped by Q601 though Q609 to produce the blanking pulse output having 100 Vp-p. This pulse is distributed to G, B, R respective G1 control circuits. The R channel G1 control circuit alone is discussed as follows. The G1 control signal is input to Q18 base. This voltage is amplified by Q18. Q19 cascode amplifier and output via Q20 buffer. D15, C24 are the clamp circuit that clamps the blanking pulses HIGH level (prepared by Q601, Q609) to VG1. This output is sent to CRT G1 via CB board. If the I board R ON/OFF switch is turned OFF. Q18 base input becomes GND level potential. As Q18 base is set to GND level. Q19 is cut off to put G1 approx. − 120V that cuts off beam.

Black Balance Stabilizing Circuit

IC2 and IC3 are the black balance stabilizing circuit that control the G1 voltage by detecting a cathode current for black balance constant. These circuit are already discussed in the Bias and Bright Control Circuit. Following is the description for the necessity of RV2.

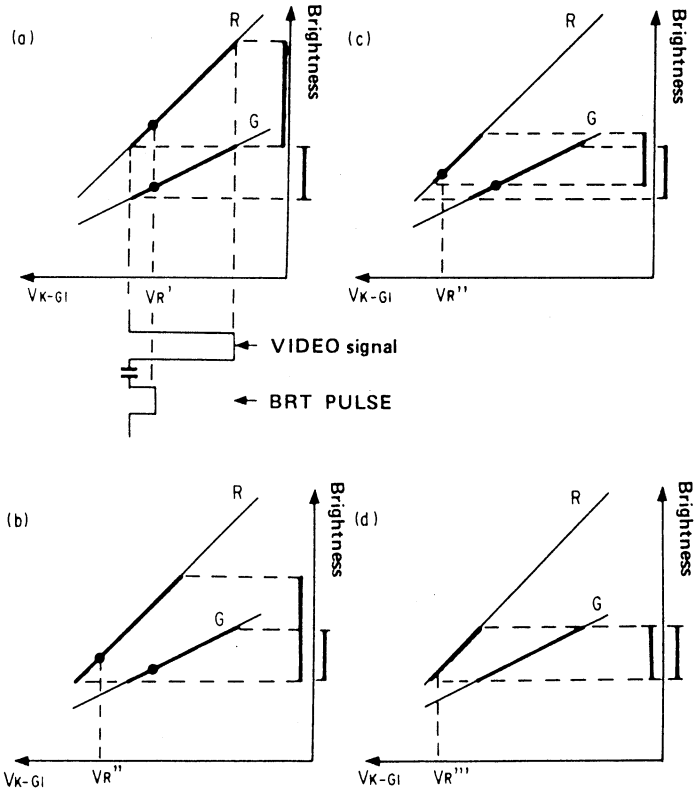


The RV2 is a potentiometer for facilitate adjustment of BIAS 2 and gain. When performing the adjustment using RV3 alone, the gain and the bias should be adjust alternately as follows.

Assuming that the conditions may have the same amplitude and the same $V_{K\text{-}G1}$ among RGB channels, as shown in fig. (a). B channel is omitted in fig. (a). As fig. (a)is showing the R channel has higher gain and bias so that it is attempted to adjust the color temperature until fig. (d)condition is obtained. First, the R bias adjustment is made by RV3 as shown in fig. (b), and perform the R-gain adjustment as shown in fig. (c). Since the black balance stabilizing circuit is operating to maintain the bright pulse amplitude as constant value, the bright pulse's $V_{K\text{-}G1}(=V_R'')$is not affected even if the amplitude is decreasing by turning the R-gain adjustment, so that the amplitude of the black level and the white level is affected centering around V_R''. Therefore, when the black balance stabilizing circuit is operated, it is necessary to perform the off-set adjustment (bias adjustment) in fig. (b) and the amplitude adjustment (gain adjustment) in fig. (c) alternately in order to obatain the color-temperature adjusted condition as shown in fig. (d).

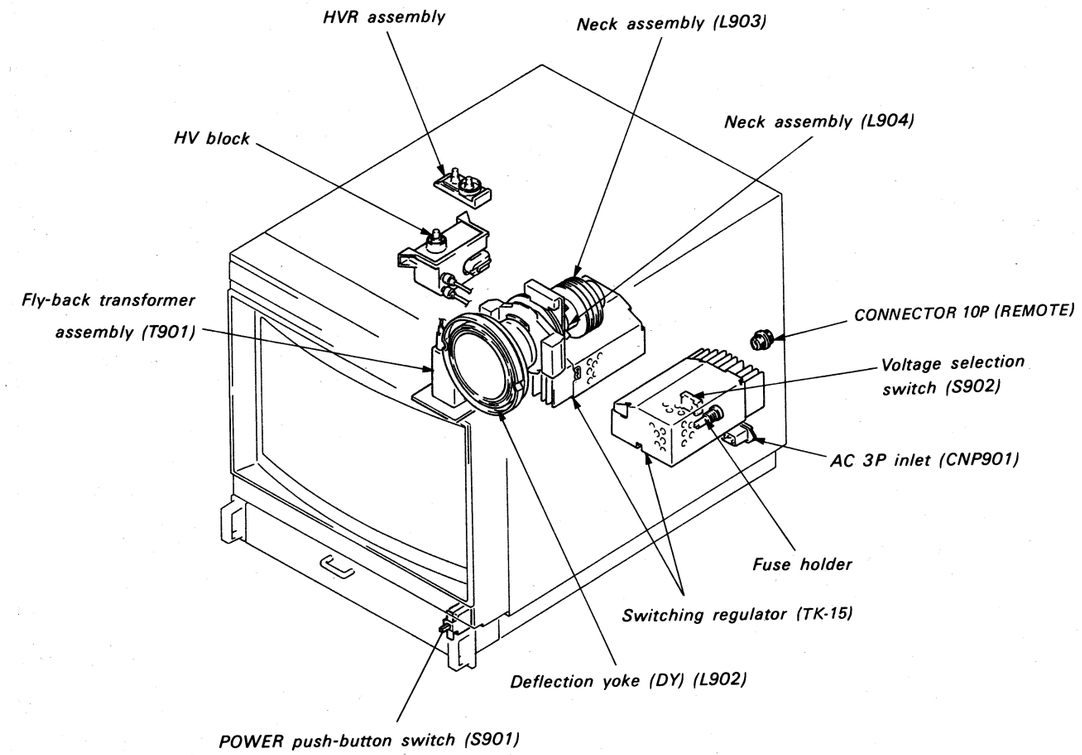
This adjustment can be completed by one time adjustment. not by repeating two adjustments alternatingly, if the black balance stabilizing circuit is temporarily disabled during adjustment. If the switch SW as shown in the following illustration is set to the ADJ position, the $V_{K\text{-}G1}$ can be determined by RV2 alone. Therefore, the adjustment is made as follows. The switch SW is ADJ set in the ADJ position, and adjust RV2 as shown in fig. (b) for bias adjustment. Adjust gain adjustment too as shown in fig. (d).

Set then the switch SW in the NORMAL position in order to operate the black balance stabilizing circuit, and adjust RV3 until V2=V1 is established for color temperature adjustment. The alternate tracking adjustment is no more necessary.

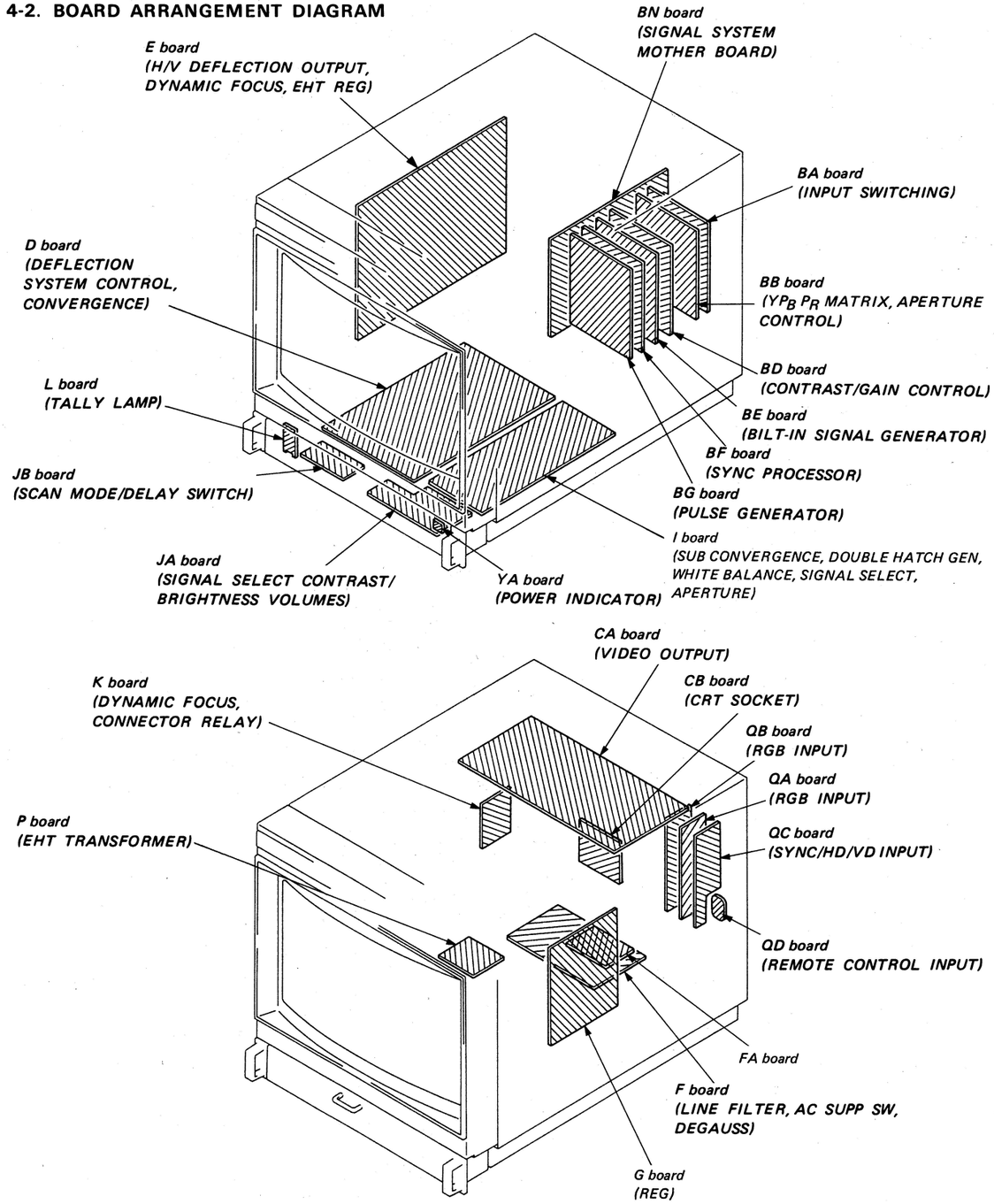


SECTION 4
ADJUSTMENT

4-1. INTERNAL VIEW DIAGRAM



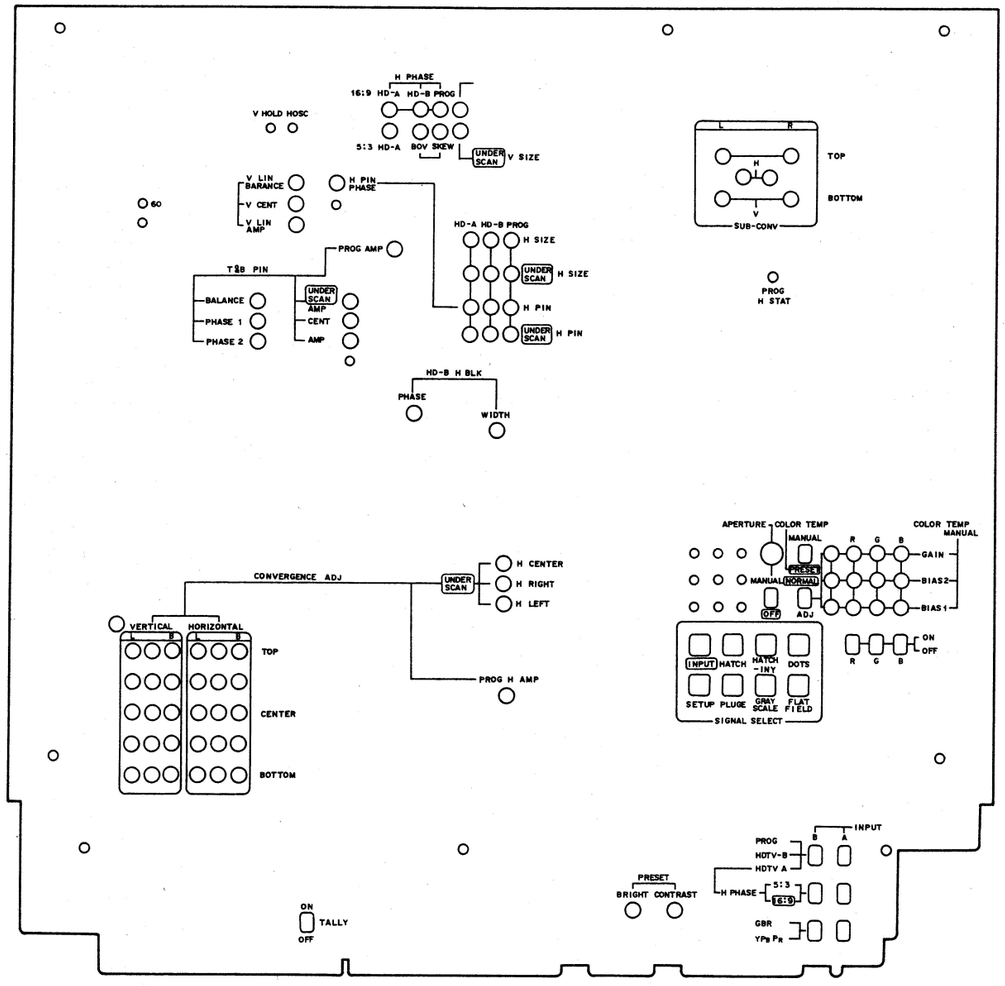
4-2. BOARD ARRANGEMENT DIAGRAM



4-3. QUICK REFERANCE

SECTION \ BOARD	BA	BB	BD	BE	BF	BG	BN	CA	CB	D	E	F
CIRCUIT DISCRIPTION	3-18	3-19	3-12	3-28	3-23	3-12	—	3-14	—	3-1	3-7	3-10
ADJUSTMENTS	—	4-33	—	4-35	4-36	4-40	—	4-42	—	4-19 4-22	4-21	—
BLOCK DIAGRAM	5-1	5-1	5-3	5-1	5-2	5-3	—	5-3	5-8	5-5	5-6	5-8
MOUNTING DIAGRAM	5-15	5-23	5-29	5-31	5-39	5-41	5-51	5-54	5-56	5-60	5-71	5-77
SCHEMATIC DIAGRAM	5-17	5-21	5-27	5-33	5-36	5-43	5-48	5-57	5-59	5-63	5-67	5-74
ELECTRICAL PARTS LIST	7-1	7-9	7-7	7-13	7-14	7-17	7-1	7-20	7-25	7-30	7-26	7-3
SECTION \ BOARD	FA	G	I	JA	JB	K	L	P	QA	QB	QC	QD
CIRCUIT DISCRIPTION	—	3-10	3-9	—	—	—	—	—	3-17	3-17	3-17	—
ADJUSTMENTS	—	—	4-29	—	—	—	—	—	4-31	4-32	4-32	—
BLOCK DIAGRAM	5-8	5-8	5-6	5-3	5-4	5-7	5-4	5-6	5-1	5-1	5-1	5-1
MOUNTING DIAGRAM	5-78	5-77	5-79	5-78	5-78	5-71	5-78	5-71	5-87	5-87	5-87	5-88
SCHEMATIC DIAGRAM	5-75	5-76	5-81	5-76	5-76	5-69	5-76	5-70	5-85	5-85	5-85	5-84
ELECTRICAL PARTS LIST	7-4	7-24	7-37	7-40	7-40	7-41	7-41	7-3	7-5	7-6	7-4	7-5
SECTION \ BOARD	XA	YA										
CIRCUIT DISCRIPTION	—	—										
ADJUSTMENTS	—	—										
BLOCK DIAGRAM	—	5-4										
MOUNTING DIAGRAM	5-89	5-78										
SCHEMATIC DIAGRAM	—	5-75										
ELECTRICAL PARTS LIST	7-41	7-37										

4-4. SUB CONTROL PANEL



4-5. SET-UP ADJUSTMENT

It describes the adjusting method when the CRT is replaced. Moreover, normally, the convergence and white balance adjustments should be performed with the volume of the subcontrol panel. (See SECTION 1 OPERATION.)

[JIG TOOLS AND MEASURING INSTRUMENTS REQUIRED]

1. Signal generator
2. Oscilloscope
   SONY TEKTRONIX 2465 type or equivalent
3. Color analyzer
   MINOLTA TV-COLOR ANALYZER II or equivalent
4. Digital voltmeter
   Number of the effective digits: Over 5 digits
5. Tracking scope
   TAKEDARIKEN TR4110+TR4114T or equivalent
6. Pulse generator
   HP8007B or equivalent
7. FET probe
8. Frequency counter
9. Beam landing adjusting jig

[Adjustment after Replacing CRT]

The following adjustments become necessary after replacing the CRT.

- **Deflection yoke installation adjustment**

Note: This adjustment is unnecessary when the adjusted deflection yoke has been installed to the new picture tube.

- Purity adjustment
- Focus adjustment
- Convergence adjustment
- G2 adjustment
- Color temperature adjustment

[DEFLECTION YOKE INSTALLATION ADJUSTMENT]

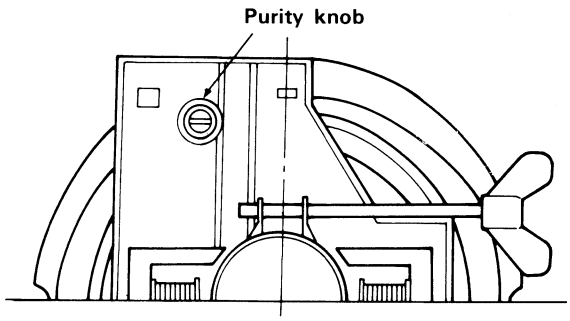
1. Receive the white signal, and maintain the current flow for over 30 minutes under the condition of the CONTRAST MANUAL and BRIGHTNESS MANUAL VR are being preset.
2. Press the CONTRAST MANUAL SW and turn the CONTRAST MANUAL VR fully clockwise.

3) Press DEGAUSS switch to demagnetize.

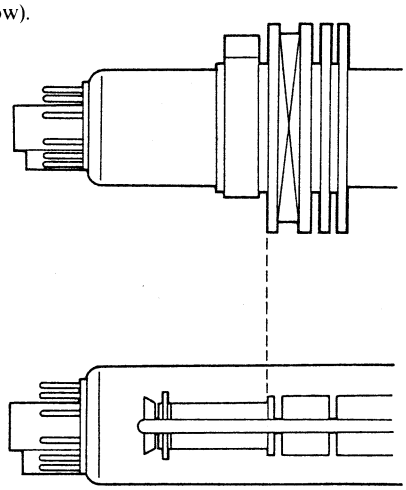
Note: Be sure to use the DEGAUSS switch after an interval of for over 5 minutes when it is used continuously.

[PURITY ADJUSTMENT]

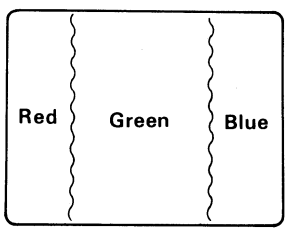
1. Set the purity knob to the mechanical center.



2. Attach tightly the DY to the CRT.
3. Fix the Neck assembly to the position shown in (Fig. below).

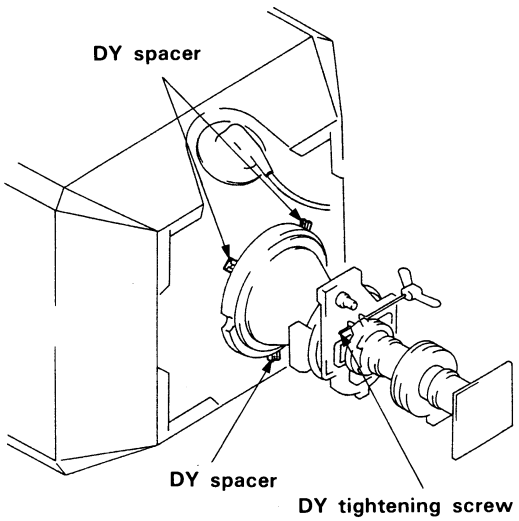


4. Make it into pure green color with the SCREEN SW of the subcontrol panel (I board). Turn OFF the red and blue.
5. Adjust the purity magnet so that the green comes at the center of the screen.

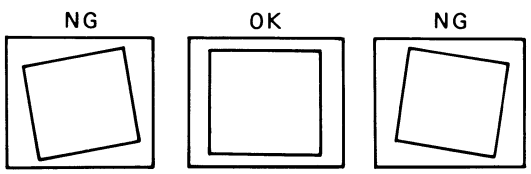


6. Pull back the DY and make the screen entirely green raster.
7. Adjust the screen into pure red color with the SCREEN SW of the I board.
8. Perform the entire screen becomes into pure red color.
9. Adjust the screen into pure blue color with SCREEN SW on the I board.
10. Perform the entire screen becomes in pure blue color.
11. Fix the DY. (Tighten the DY fixing screw.)
12. When there is a vertical misconvergence on the X axis, shake the DY neck and insert the wedge-shaped DY spacer between the neck and yoke.

Note: At this point, be sure to keep the V CONV (RV24 and RV34) of the sub control panel (D board) to the center.

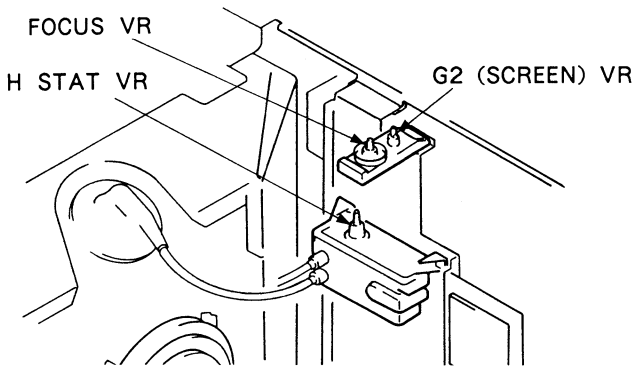


13. Be sure to confirm that the raster does not skew.



[FOCUS ADJUSTMENT]

1. Receive the inverse double crosshatch signal (black in white base) with the internal signal.
2. Adjust with FOCUS VR so that the center of the screen becomes the best focus point.



[CONVERGENCE ADJUSTMENT]

Preparation; Set the selection switch SW to HDTV-A mode.

1. Input the crosshatch signal (Internal or external signal)

Note: Take note that there is a possibility that the picture of the internal SG differs in the picture phase from that of the external SG.
It can be matched with H PHASE of the sub control panel (D board).

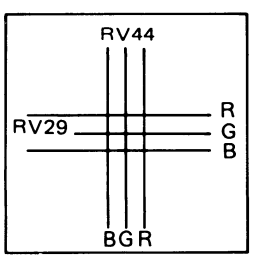
2. Turn ON (▭) the CONTRAST MANUAL SW on the front panel and adjust with the CONTRAST MANUAL VR so that the crosshatch can be seen with ease.

Note: Unless otherwise specified , use VRs on the D board for following convergence adjustments.

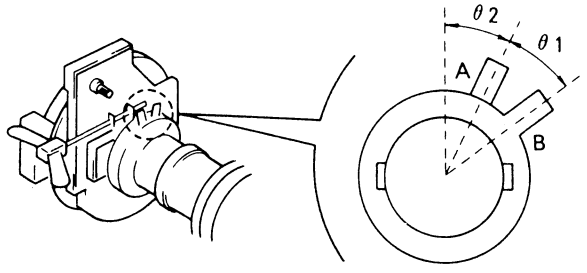
(1) Static convergence adjustment (Place the set eastward)

Note: Since steps 1 to 4 have previously been adjusted, it is unnecessary to adjust other than when replacing the DY.

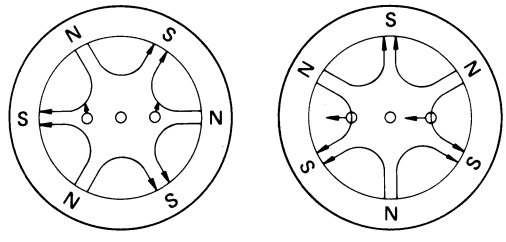
1. Adjust by turning the center VR (RV29 and RV44) of the V and H convergences of the sub control panel (D board) so that the 3 colors of red, green, and blue become into parallel lines at the center.



2. At this point, when the color deviation in horizontal direction is small, turn the H.STAT VR within the HV block.
3. Turn the 6-pole magnet ring positioned at the rear of the DY and adjust so that the distance between the red and green and that of blue and green of the 3 colors parallel lines become equivalent. (Alter $\theta 1$ and $\theta 2$.)



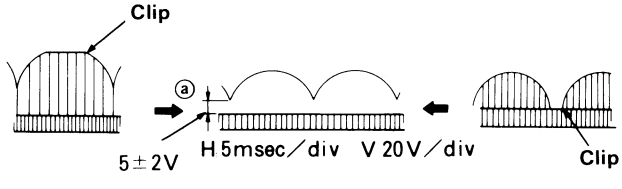
Note: Movement of the correction due to 6-pole magnet ring Generate the magnetic flux of the equivalent amount and equivalent direction against the side beams (blue and red) and change the correction amount by varying the opening angle of the 2 sheets of the magnets and change the correction direction by turning simultaneously the 2 sheets of the magnets to converge the side beams.



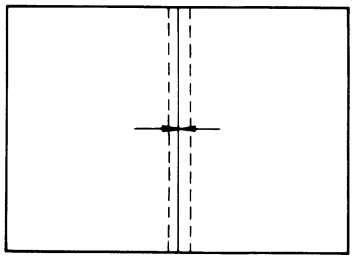
Correction due to 6-pole magnet ring

4. Perform rough adjustment of the convergence with the VR on the sub control panel (D board).
5. Connect probe to the positive pole of C35 on the E board. The parabolic DC level of the V period of a changes when turning the center VR (RV44) of the H convergence on the sub control panel (D board).
   Adjust RV44 so that the upper and lower points of the DC level are not clipped.

Note: Be sure to perform this adjustment when the movement of RV44 is not smooth.



6. Match the horizontal misconvergence at side of the center of the screen by turning the H STAT VR of the HV block.



7. Make painted lock of the H STAT VR.

(2) Dynamic Convergence Adjustment

1. Adjust with the convergence VRs on the sub control panel (D, I board).
2. Each VR corresponds to a screen portion.
3. Red and blue symmetrically moves against green for the adjustment. (Green does not move.)
4. Make the adjustment in the order from the center, Y axis, X axis and to the corners on the screen.

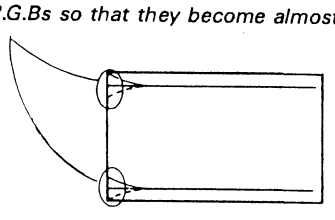
(3) V-Convergence Phase Adjustment (Normally unnecessary because this adjustment has already been made at the time of shipment.)

Connect a probe to the Q81 collector on the D board and set the pulse width at 1.5 ± 0.05 μsec by turning RV75 (V-CONV PHASE).

(4) V-Sub Convergence Adjustment (Normally unnecessary because this adjustment has already been made at the time of shipment.)

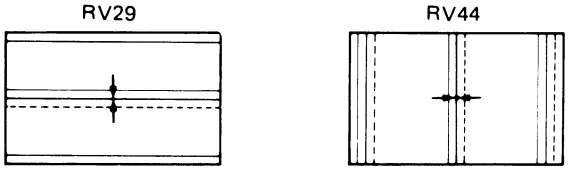
1. Select the HDTV A mode and Set the RV104, RV105 and RV202 to RV205 on the I board to the mechanical center.
2. Turn RV78 (V SUB CONV) counterclockwise fully.
3. Set volume RV22 through RV36 to the mechanical center and closely match the H convergence with RV36 through RV51.
4. Match with RV27 through RV31 (V convergence in the center).
5. Turn RV22 clockwise fully and RV26 counterclockwise fully.
6. Turn RV78 clockwise so that respective R.G.Bs become almost parallel on the left edge.
7. Here, make an analog convergence adjustment again.

Match the R.G.Bs so that they become almost horizontal.



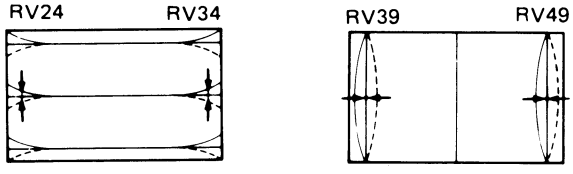
(5) Convergence Adjustment Procedure

1. Input the cross-hatch signal and select the HDTV A mode.
2. Reset the digital convergence data.
3. Set the CONTRAST MANUAL SW and BRIGHTNESS MANUAL SW on the front panel to ON ( ), respectively, and turn the corresponding VRs to the appropriate position for easy observation.
4. Match CONVERGENCE of the screen center with RV29 and RV44.

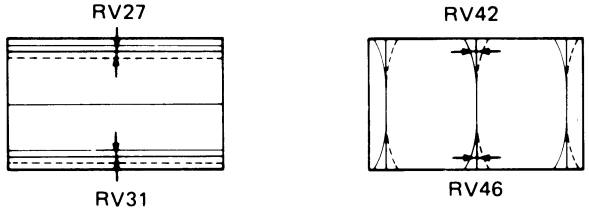


5. Match the respective CONVERGENCE of the screen the left and the right (on X axis) from the center with RV24, RV34, RV39 and RV49.

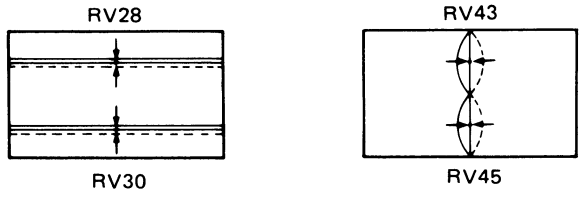
Note: Match first with RV34 and RV49 (on the right side).



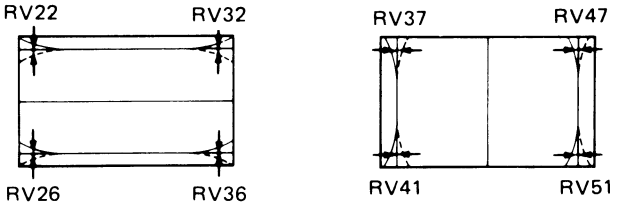
6. Match the respective CONVERGENCE of the screen upper and the lower (on Y axis) from the center with RV27, RV31, RV42 and RV46.



7. Match the respective CONVERGENCE of the screen upper middle section and the lower middle section from the center with RV28, RV30, RV43 and RV45.

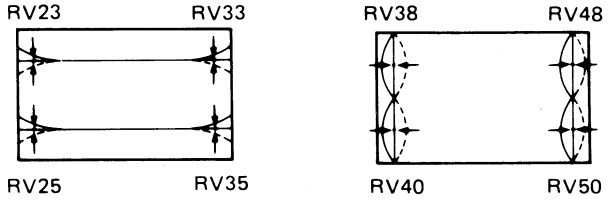


8. Match the respective CONVERGENCE of the screen corners with RV22, RV26, RV32, RV36 and RV37, RV41, RV47, RV51.



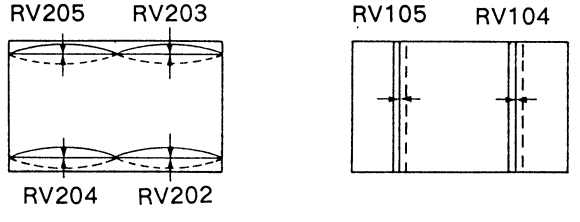
Note: Match first with RV32, RV36, RV47 and RV51 (on the right side).

9. Match the convergences of the screen middle upper left and right and the middle lower left and right with RV23, RV25, RV33, RV35 and RV38, RV40, RV48, RV50.

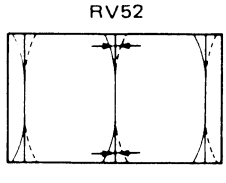


Note: Match first with RV33, RV35, RV48 and RV50 (on the right side).

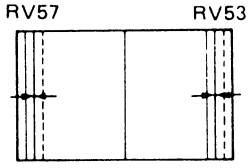
10. Match the respective convergence of a quarter part of screen both sides with RV104, RV105 and RV202 to RV205 on the I board.



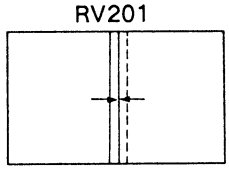
11. If the convergence is not correct at this time yet, perform the adjustment again from step 4 above.
12. Select the UNDER SCAN mode.
13. Match RGB of the screen center upper and the lower with RV52.
    The upper and lower sections move at the same time.



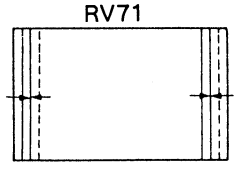
14. Match CONVERGENCE of the screen center left and right with RV53 and RV57.



15. Set to normal scan mode of PROG.
16. Match the convergence of the screen center with R201 on the I board.



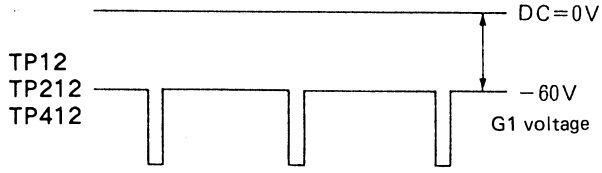
17. Match the convergence of the screen right and left with RV71. (Right and left convergences are simultaneously adjustable.)



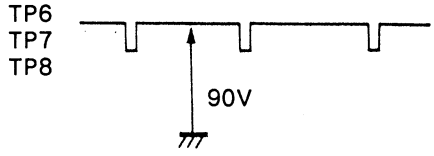
[G2 Adjustment]

1. Set SWs and VRs as follows.
   Front Panel
   INPUT selection switch ····· A CH
   CONTRAST MANUAL SW ····· Preset
   BRIGHT MANUAL SW ····· Preset

   Inside of Drawer
   System selection switch
   (S110 and S113 on the JA board) ···· HD-A
   Screen switch
   (S1 to S3 on the I board) ····· RGB all ON
   Color temperature selection switch
   (S6 on the I board)····· Preset
   PRESET CONTRAST VR
   (RV101 on the JA board) ····· Mechanical Center
   BIAS 1 and 2 VR (RV14 to RV19 and RV24
   to RV29 on the I board) ····· Mechanical Center
2. Using VRs and TPs on the CA board, adjust the G1 voltage of each R, G and B to − 60V.
   R ···TP12, RV2 (R-BIAS)
   G ···TP212, RV202 (G-BIAS 1)
   B ···TP412, RV402 (B-BIAS 1)



3. Using VRs on the CAs board and TPs on the CB board, adjust the pedestal level of cathode for each R, G and B to +90V.
   R ···TP6 (KR), RV1
   G ···TP7 (KG), RV201
   B ···TP8 (KB), RV401



4. Adjust G2 (SCREEN) VR so that the most luminous color among R, G and B becomes faint light.
5. Paint lock G2 (SCREEN) VR.

[Color Temperature (PRESET) Adjustment]

1. Be sure to perform the G2 adjustment before performing the color temperature adjustment. Set SWs and VRs to the same setting as in the G2 adjustment.
2. Select PRESET with the color temperature selection switch.
3. Adjust color temperature of PRESET, using the color analyzer as follows.

① BIAS 1 adjustment
SW setting
GAIN/BIAS ADJ switch
(S4 on the I board) ····· ADJ
TEST SIGNAL button
(S7 on the I board) ····· SET UP
Adjusting VR
R-BIAS 1····· Coarse adjustment RV2 (CA board), Fine adjustment RV27 (I board)
G-BIAS 1 ···· Coarse adjustment RV202 (CA board), Fine adjustment RV28 (I board)
B-BIAS 1····· Coarse adjustment RV402 (CA board), Fine adjustment RV29 (I board)
Using color analyzer, adjust color temperature of the screen center as follows.
Color temperature ····· 6500K
Luminance ····· 0.5 NIT

② GAIN adjustment
SW setting
TEST SIGNAL button ····· FLAT FIELD
Adjusting VR
R-GAIN····· RV21 (I board)
G-GAIN····· RV22 (I board)
B-GAIN····· RV23 (I board)
Using color analyzer, adjust color temperature of the screen center as follows.
Color temperature ····· 6500K
Luminance····· 120 NIT

③ Select SET UP with TEST SIGNAL button, and confirm that the color temperature is optimum at SET UP.
If not, repeat steps ① and ② .

④ BIAS 2 adjustment
SW setting
GAIN/BIAS ADJ switch····· NORMAL
TEST SIGNAL button ····· SET UP
Adjusting VR
R-BIAS 2 ····· RV24 (I board)
G-BIAS 2 ····· RV25 (I board)
B-BIAS 2 ····· RV26 (I board)
Using color analyzer, adjust color temperature of the screen center as follows.
Color temperature ····· 6500K
Luminance····· 0.5 NIT

⑤ GAIN adjustment
SW setting
GAIN/BIAS ADJ switch····· NORMAL
TEST SIGNAL button ····· FLAT FIELD
Adjusting VR
R-GAIN····· RV21 (I board)
G-GAIN····· RV22 (I board)
B-GAIN····· RV23 (I board)
Using color analyzer, adjust color temperature of the screen center as follows.
Color temperature ····· 6500K
Luminance····· 120 NIT

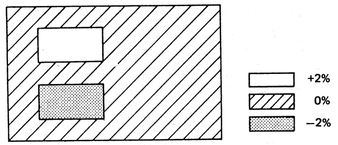
⑥ Select SET UP with TEST SIGNAL button, and confirm that the color temperature is optimum at SET UP.
If not, repeat steps ④ and ⑤ .

[Color Temperature (MANUAL) Adjustment]

1. Select MANUAL with color temperature selection switch.
2. Adjust MANUAL color temperature as performed in PRESET color temperature adjustment.
However, use following adjusting VRs. RV2, RV202 and RV402 on the CA board are not used.
R-BIAS 1 ····· RV17 (I board)
G-BIAS 1····· RV18 (I board)
B-BIAS 1····· RV19 (I board)
R-GAIN ····· RV11 (I board)
G-GAIN ····· RV12 (I board)
B-GAIN ····· RV13 (I board)
R-BIAS 2····· RV14 (I board)
G-BIAS 2····· RV15 (I board)
B-BIAS 2····· RV16 (I board)

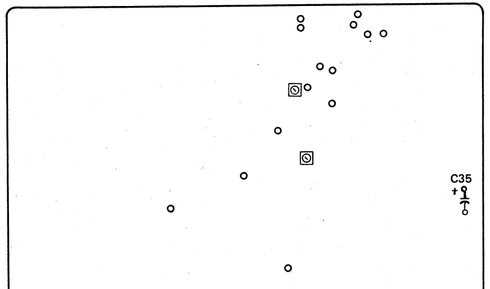
[SETTING THE PRESET BRIGHTNESS AND PRESET CONTRAST ADJUSTMENT CONTROL]

1. Change the CONTRAST MANUAL switch and the BRIGHT MANUAL switch on the front panel to the preset positions. Change the system selection switch on the JA board to HD-A.
2. Display on the screen the PLUGE internal test signal. Adjust the brightness using the PRESET BRIGHT adjustment control on the JA board, so that the −2% portion and 0% portion become indistinguishable.

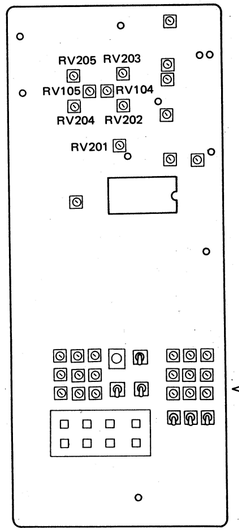


3. Display on the screen the FLAT FIELD internal test signal. Adjust the contrast with the PRESET CONTRAST adjustment control on the JA board using the luminance meter, so that the luminance becomes 120nit.

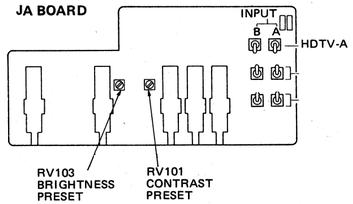
E BOARD

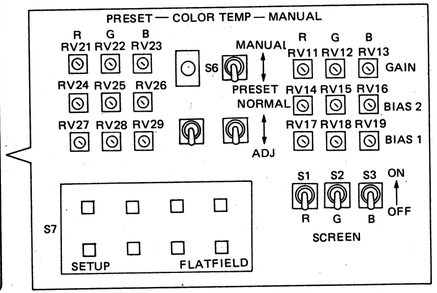


I BOARD

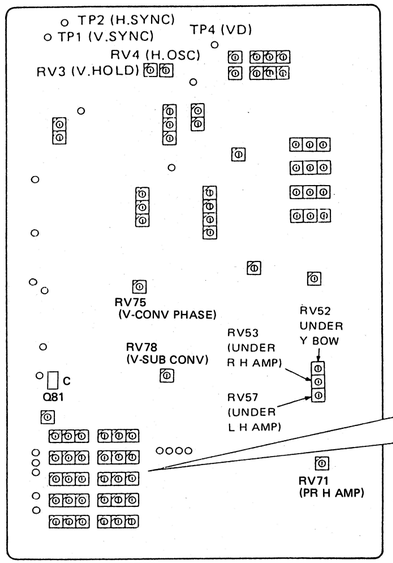


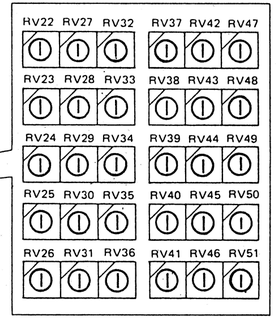
JA BOARD



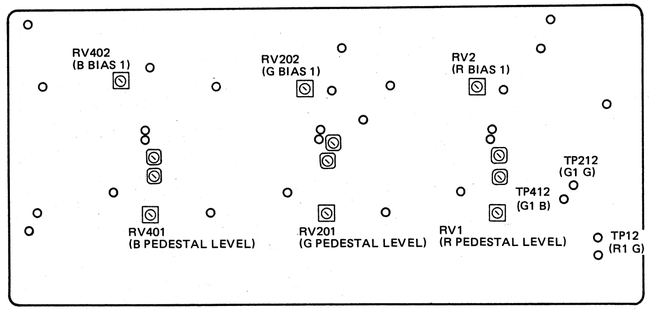


D BOARD

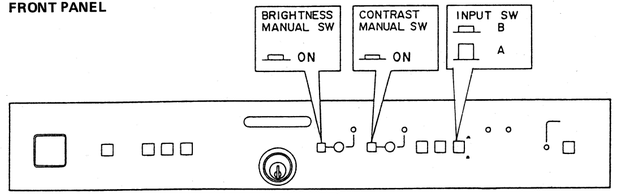




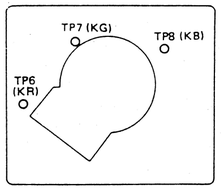
CA BOARD



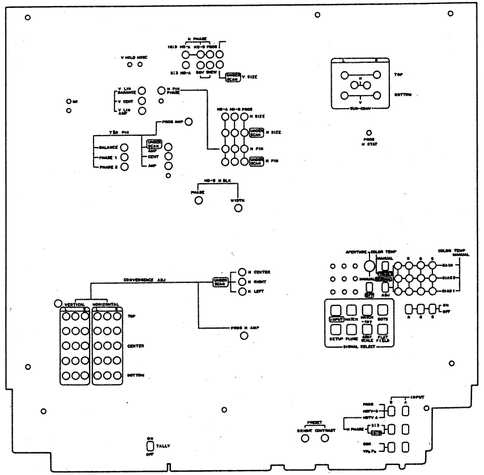
FRONT PANEL



CB BOARD



SUB CONTROL PANEL



HIGH VOLTAGE ADJUSTMENT

High voltage adjustment is necessary when the components shown below are replaced. Use a high voltage meter for the adjustment.

High voltage blocks, D40, R114, R115, R116, R184 and RV2

1. Receive the white signal and make VR into PRESET mode.
2. Connect a high voltage meter to the anode cap.
3. Adjust RV2 (VRV) to HV=27 ± 0.2 kV
4. Switch the signal between white and black and be sure the high voltage deviation is less than 0.05kV.

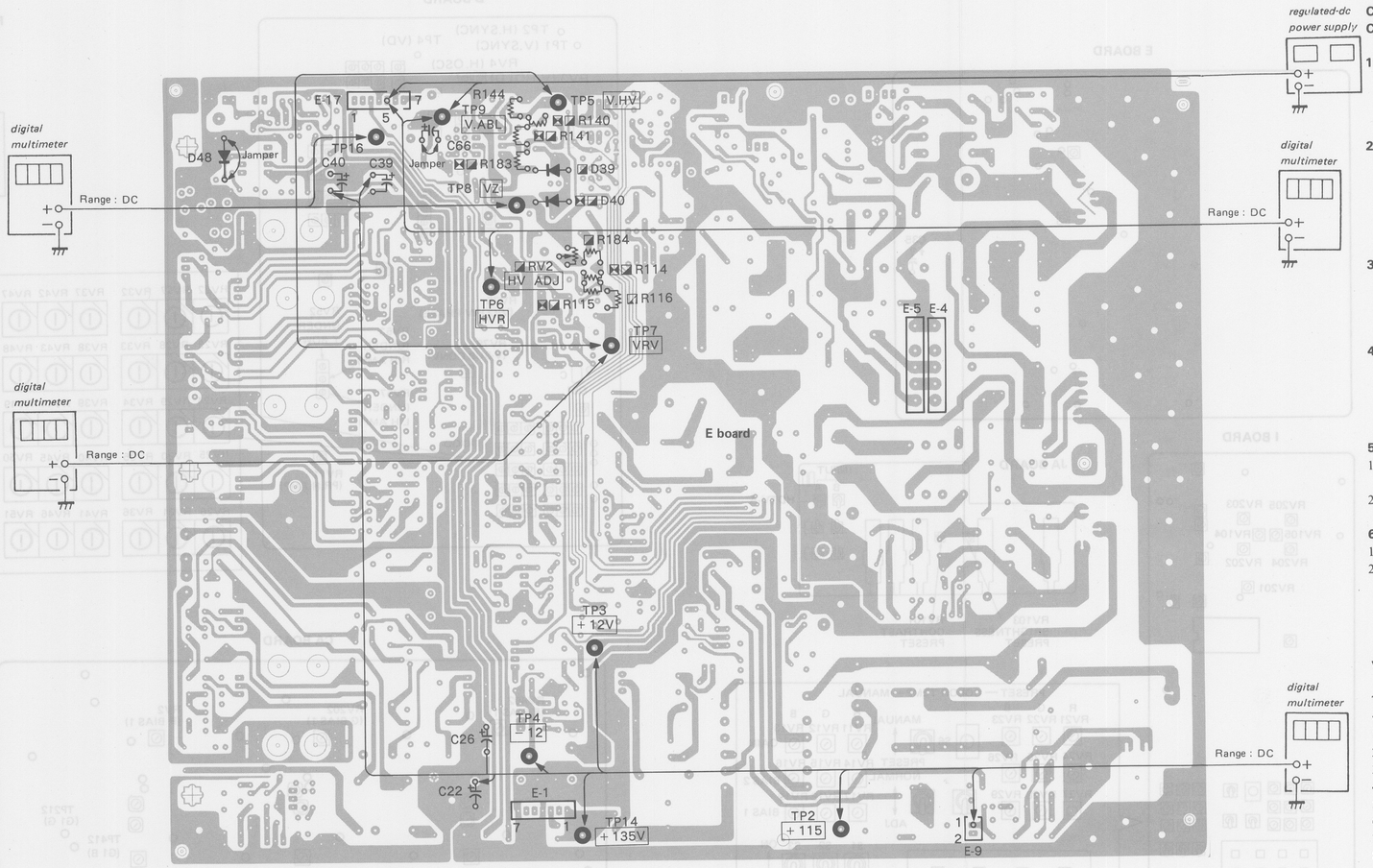
Note: If a high voltage meter is not available, adjust the TP7 (VRV) voltage to 9.00 $^{+0.1}_{-0.25}$ VDC with RV2. Switch the signal alternately and be sure there is no deviation in screen size.

CONFIRMATION OF HIGH VOLTAGE CIRCUIT COMPONENT REPLACEMENT

The specified condition must be satisfied when the following components are replaced:

E board

D40	μPC574J.HZT33-02 ⊠◪	TP8: Within 32.2±1.2VDC
R184	22k±1% ◪	TP7: Adjustable to 9.00 $^{+0.1}_{-0.25}$ VDC
R114	Adjustment resistor ⊠◪	Must be less than 9.80 VDC at RV2 max.
R115	Adjustment resistor ⊠◪	
R116	10k±1% ◪	
RV2	2k±10% ◪ Metal grace VR	
R183	Adjustment resistor ⊠◪	TP5: Within 9.9 ± 0.20 VDC
R140	Adjustment resistor ⊠◪	
R141	Adjustment resistor ⊠◪	
R144	10k±1% ◪	
D39	μPC574J.HZT33-02 ◪	
D48	RD6.2EN ★	(D48 cathode voltage) Within 6.0±0.50VDC
Power supply (TK15)		TP2: Within 115±1VDC
HV block, K board, E board	1. Operation confirmation of the high voltage regulator	
D45, R145, 146, E board IC5, R142, 143	2. Confirmation of the HV protector	
D44, R139, D54 IC6, E board	3. Confirmation of the Ik protector II	
D43, IC5, R137, E board	4. Confirmation of the Ik protector I	



CONFIRMATION OF HIGH VOLTAGE PROTECTION CIRCUIT

1. Operation Confirmation of High Voltage Regulator
- HV must be 27 ± 0.2 kV. (Further, switch the signal from white to black.)
- The TP6 (HVR) voltage must be 9.00 $^{+0.1}_{-0.25}$ VDC

2. Confirmation of High Voltage Hold-down Circuit
- The voltage of pin ⑤ (TP5 VHU) of the connector E-17 must be 9.00 ± 0.5 VDC.
- When 9.5 to 9.7 VDC is applied to pin ⑤ of the connector E-17. The hold-down circuit should be active erasing the raster when 10.1~10.2 VDC is applied.

3. Confirmation of Ik Protector Circuit I
- When between A and K (TP16-GND) of D48 is short-circuit and 8.7 to 8.8V is applied from the external DC power supply to TP-9 (ABL), the protector circuit operates and the raster disappears.

4. Confirmation of Ik Protector Circuit II
- When the both ends of C66 (TP17-TP18) is short-circuit and 4.9 to 5.0V is applied from the external DC power supply to TP-9, the protector circuit operates and the raster disappears.

5. Confirmation of H STOP
1) Disconnect either connector E-4 or E-5 and turn on the power supply.
2) Be sure that the high voltage protector operates and the raster does not appear.

6. Confirmation of V STOP
1) Remove connector E-14 and set the power supply ON.
2) Be sure that the high voltage protector operates and the raster disappears.

VOLTAGES OF RESPECTIVE SECTIONS ON E BOARD

The voltages of the respective sections must be as follows (in the white signal preset condition):
1. Pin ① of the connector E-1 (TP14 135V): 135±1VDC
2. Pin ② of the connector E-1 (TP2 115V): 115±1VDC
3. Pin ⑤ of the connector E-1 (TP3 12V): 12±0.6VDC
4. Pin ⑥ of the connector E-1 (TP4 −12V): −12±0.6VDC
5. C22 ⊕ pole: 21±1VDC
6. C26 ⊖ pole: −21±1VDC
7. C39 ⊕ pole: 33± 2.0VDC
8. C40 ⊖ pole: −33± 2.0VDC
9. Pin ① of the connector E-9: −130±10VDC

4-7. CIRCUIT ADJUSTMENT

CONNECTION METHOD DURING BOARD ADJUSTMENT AND SETTING OF SW

Unless otherwise specified in the following pages, the connection method and switch setting of SW must be made as follows: When only HDTV A is used, it is unnecessary to make adjustments needed for HDTV B or PR.

SETTING POSITIONS OF SWITCHES AND CONTROL KNOBS

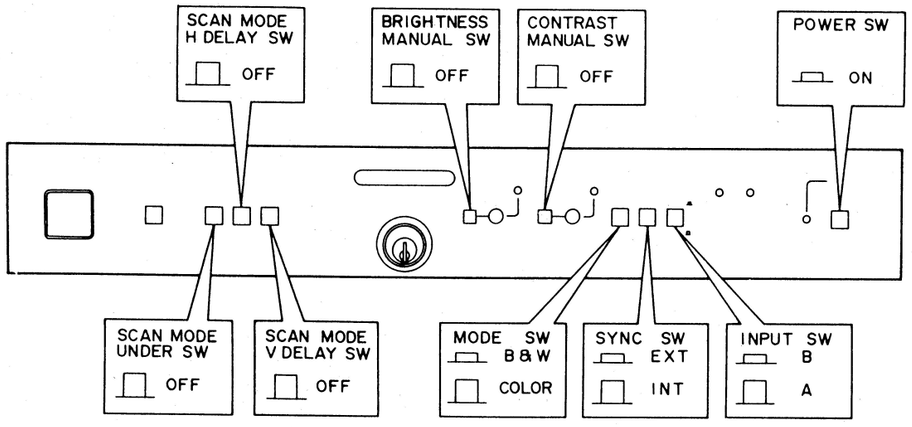
FRONT PANEL

1. INPUT switch ..... A (⊓) — JA board
2. SYNC switch ..... INT (⊓) — JA board
3. MODE switch ..... COLOR (⊓) — JA board
4. CONTRAST MANUAL switch ..... PRESET (⊓) — JA board
5. BRIGHTNESS MANUAL switch ..... PRESET (⊓) — JA board
6. SCAN MODE V DELAY switch ..... OFF (⊓) — JB board
7. SCAN MODE H DELAY switch ..... OFF (⊓) — JB board
8. SCAN MODE UNDER switch ..... OFF (⊓) — JB board

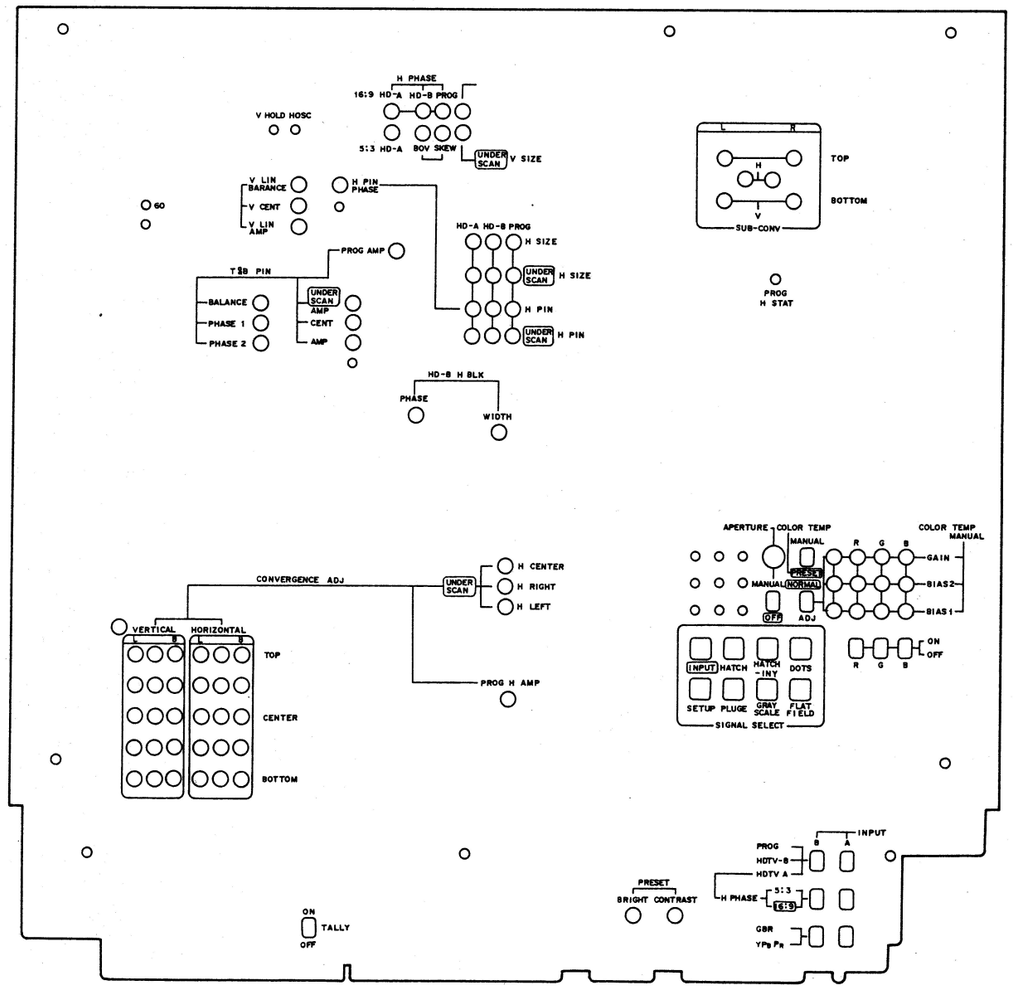
SUB CONTROL PANEL

9. INPUT A MODE SELECT switch (SW102) ..... GBR — JA board
10. INPUT B MODE SELECT switch (SW101) ..... GBR — JA board
11. INPUT A H PHASE SELECT switch (SW109) ..... 16:9 — JA board
12. INPUT B H PHASE SELECT switch (SW108) ..... 16:9 — JA board
13. INPUT A SYSTEM SELECT switch (SW113) ..... HDTV A — JA board
14. INPUT B SYSTEM SELECT switch (SW110) ..... HDTV A — JA board
15. TALLY switch (SW5) ..... OFF — JB board

FRONT PANEL

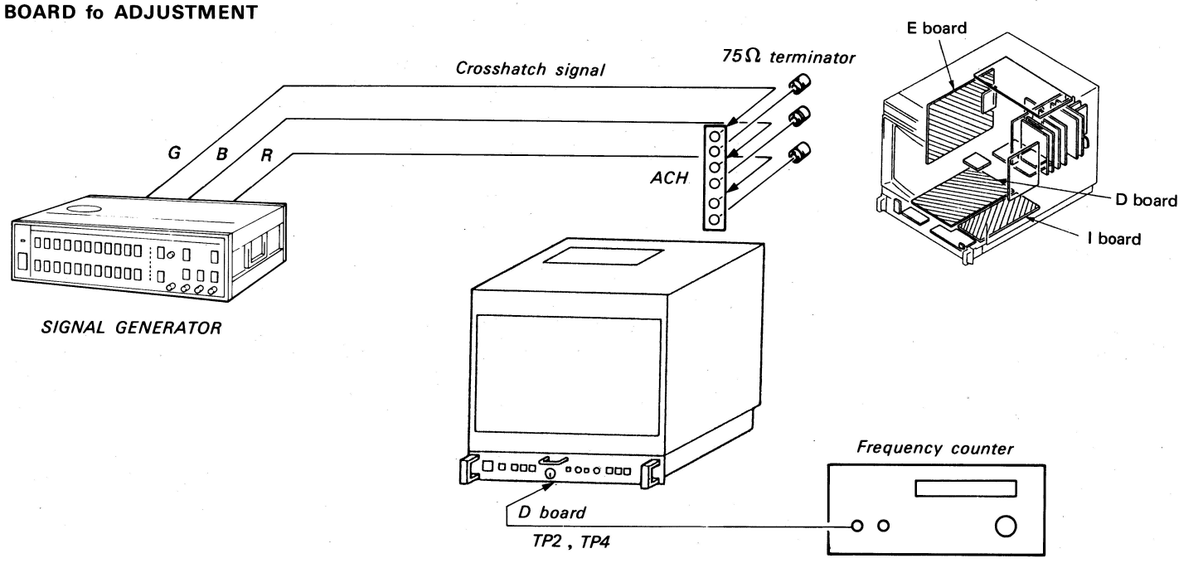


SUB CONTROL PANEL



1. D AND I, E BOARDS ADJUSTMENT

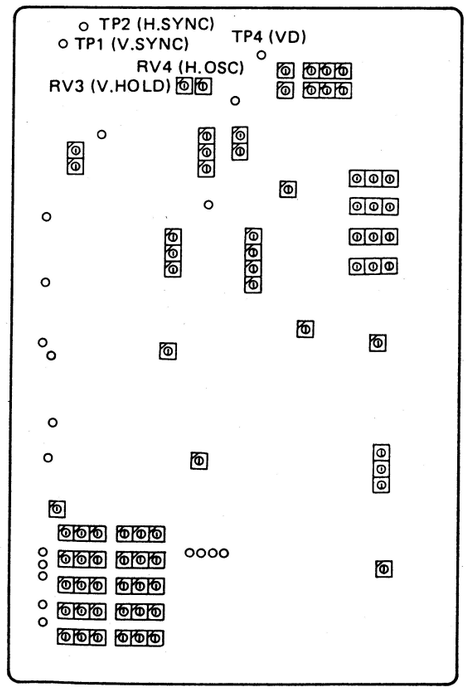
D BOARD fo ADJUSTMENT



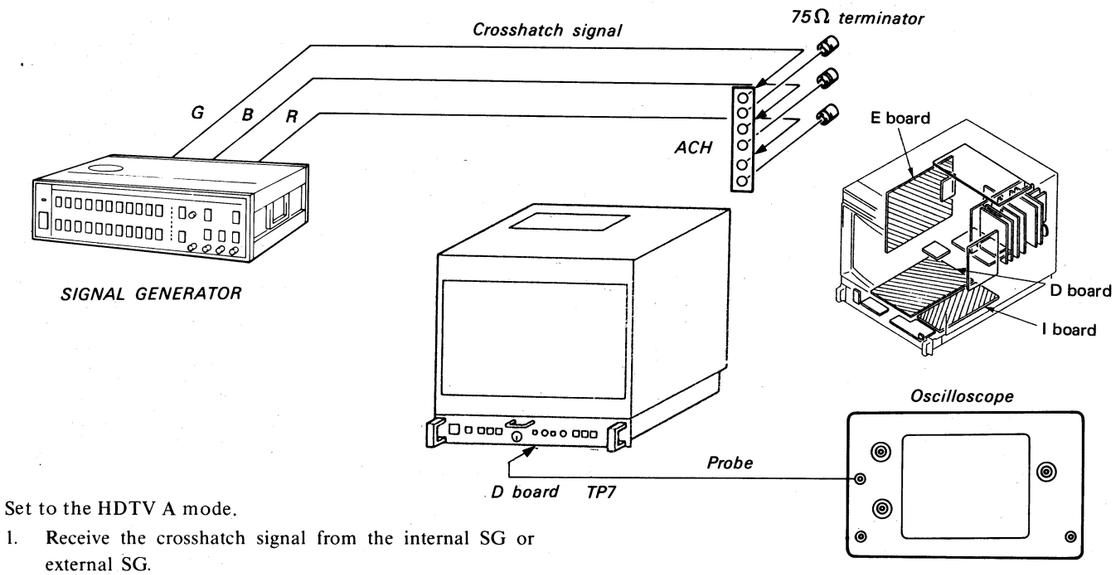
Set to the HDTV A mode.

1. Input signal from external SG.
2. Set to GND with clip the TP2 (H SYNC) of D board, and adjust with RV4 (H OSC) so that the image moving sideways stops.
3. Set to GND with clip the TP1 (V SYNC) and adjust with RV3 (V HOLD) so that the vertical frequency of the TP4 (VD) becoms 55±1.0Hz when the frequency counter is connected to TP4 (VD). Remove clips of TP1 and TP2.

D board



D BOARD V LAMP ADJUSTMENT

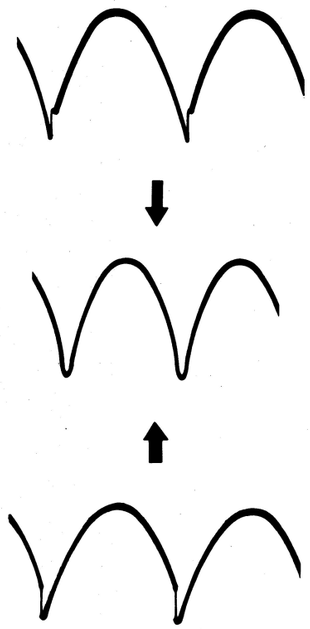


Set to the HDTV A mode.

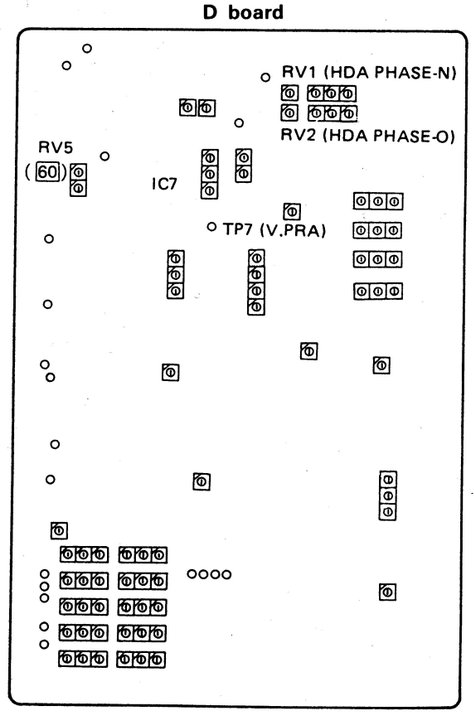
1. Receive the crosshatch signal from the internal SG or external SG.

Note: The picture phase may be different from the internal SG and the receiver image. This phase difference can be matched with HDA H PHASE 16:9 (RV1) or HDA H PHASE 5:3 (setting is by SW on JA board) (RV2) on the subcontrol panel D board.

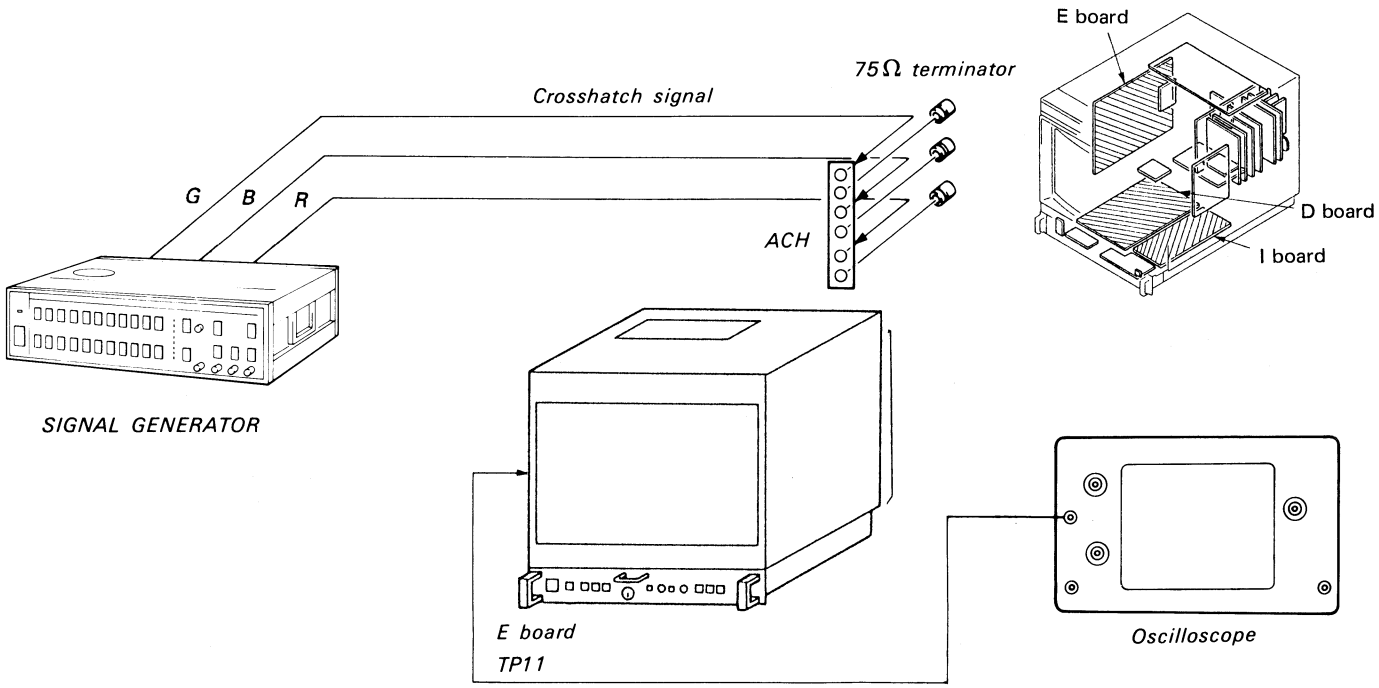
2. Connect the probe to pin ⑦ (TP7) V.PRA of IC7 of D board, and adjust the VR of [60] (RV5) to display the waveform as shown below.



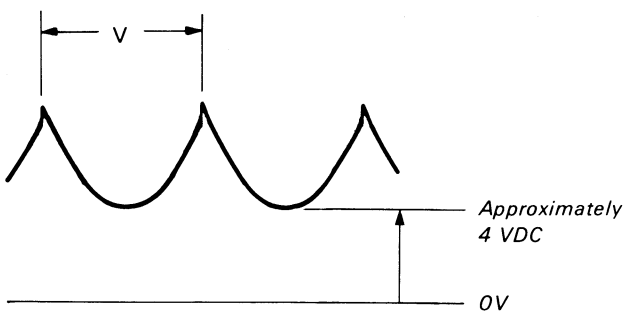
D board



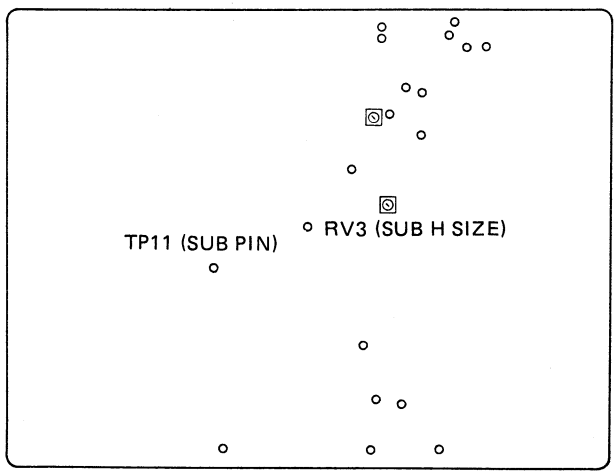
E BOARD H SUB PIN ADJUSTMENT



1. Receive a cross hatch signal (internal HDTV A signal or external signal)
2. Connect probe to TP11 (Q41 collector) on E board.
3. Adjust with RV3 (SUB H SIZE) on E board so that it becomes approximately 4.0 VDC.



E board



D BOARD GEOMETRY CORRECTION ADJUSTMENT

- Press the BRIGHTNESS MANUAL SW. (in the lamp lit state)

1. H CENT Adjustment

1) Turn ON the BRIGHTNESS SW on the front panel and turn VR clockwise.
2) With the H SIZE VR (RV15) on the D board, minimize the horizontal size so that raster on the left and right of the screen disappears. (It is best to remove BLK. Remove the D-7 connector and lower the D75 thyristor gate on the E board to GND.)
3) Make into V DELAY MODE.
4) Turn CENT VR (RV70). Put the D-7 connector and Put them back to the original position.

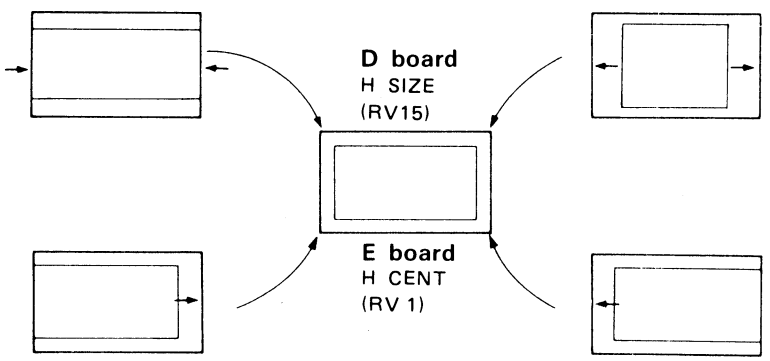
2. Picture Phase Adjustment

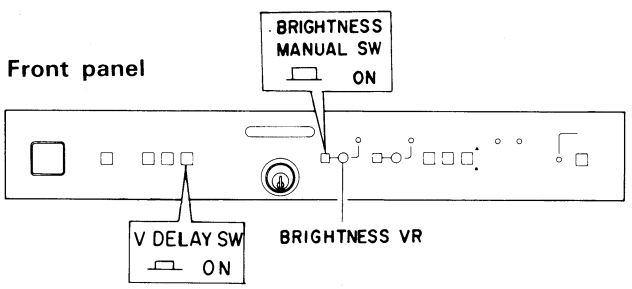
1) Set SW101 and SW102 on the JA board at HD A H PHASE 16:9.
2) Adjust RV1 (HDA H PHASE 16:9) on the D board so that the image is placed in the center of the raster.
3) Set SW101 and SW102 on the JA board at HD A H PHASE 5:3.
4) Adjust RV2 (HDA H PHASE 5:3) on the D board so that image is placed in the center of the raster.

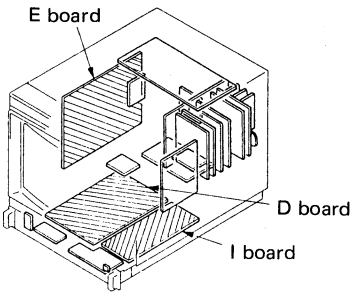
Note: Perform adjustment of the picture phase with the external input signal to be actually used.

Note: When the phase of HD, VD and EXT SYNC differs, see the HD and H. SYNC phase adjustment in page 4-44.

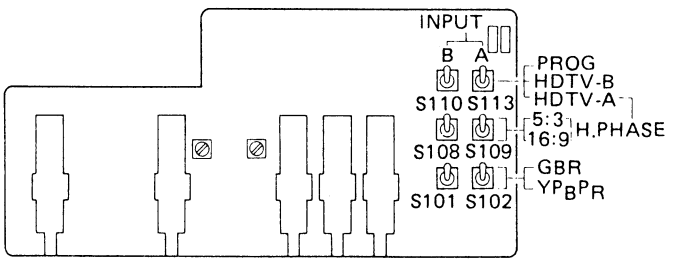
5) Select the HDTV SYSTEM B mode to feed the input signal and adjust with RV72 (HDB H PHASE) as described above.
6) Select the PR mode and adjust with RV73 (PR H PHASE) in the same way.
7) When the H size is reduced, adjust to correct size.



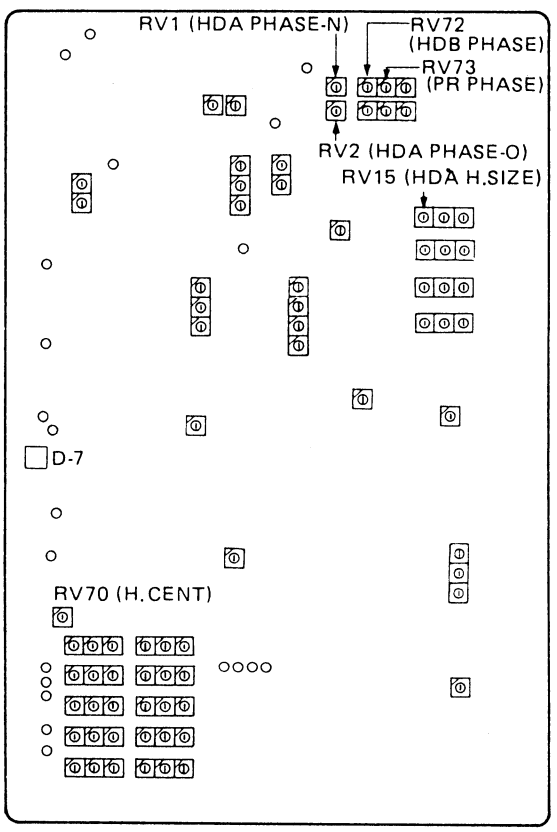




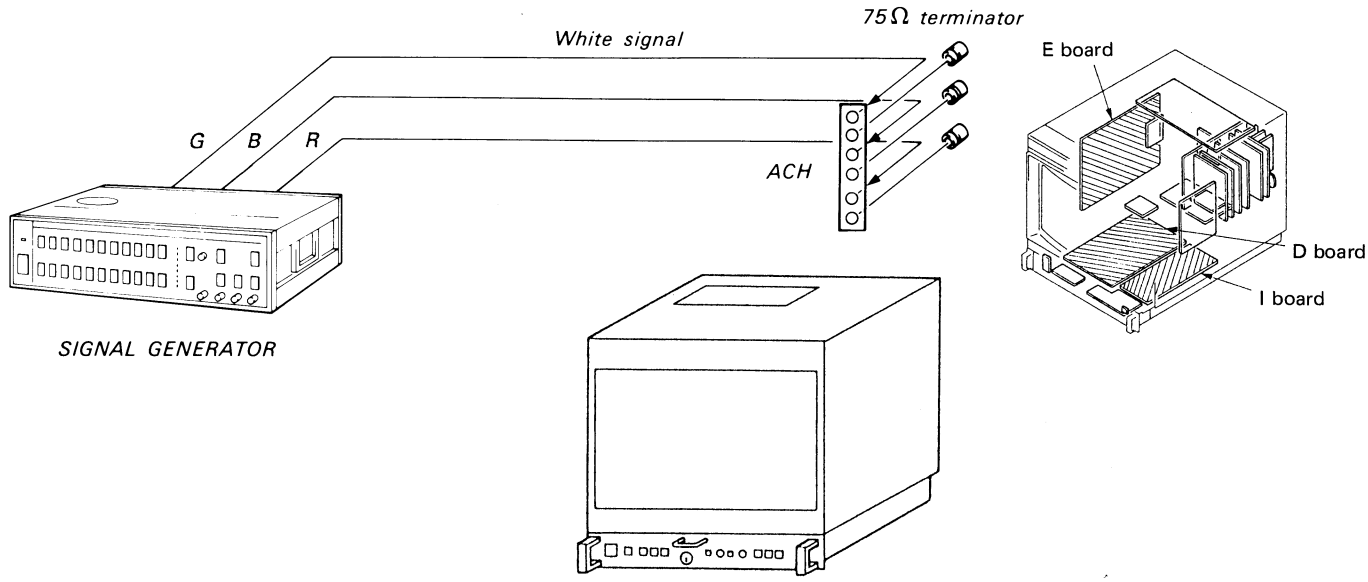
JA board



D board

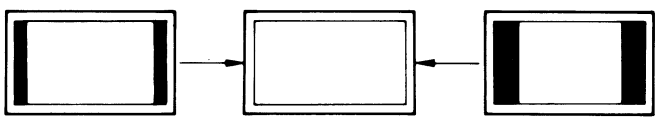


D BOARD HORIZONTAL BLANKING ADJUSTMENT



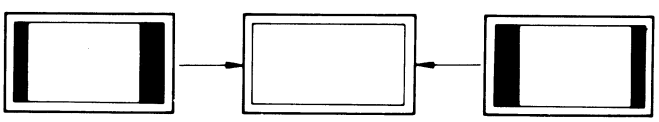
1. Receive the white signal on the picture tube. (internal or external signal)
2. Set to HDTV B. Adjust the horizontal blanking so that the picture occupies the full screen while engaging tracking of HDB H BLANKING WIDTH (RV77) with HDB H BLANKING PHASE (RV76) on the D board. Adjustment is easier with a shorter H size. Return to the original (HDB H RV16) after adjusting.

Adjust the width of the horizontal blanking.



H BLK WIDTH (RV77)

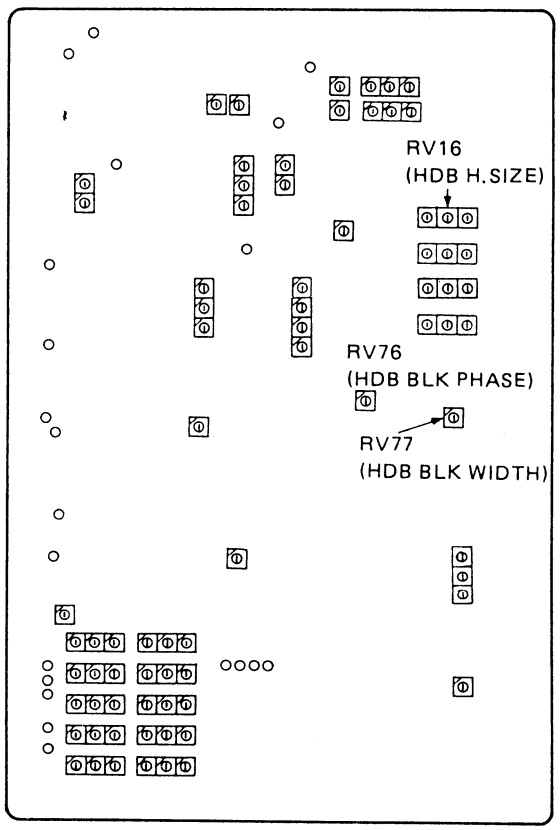
Adjust the phase of the horizontal blanking on both sides.



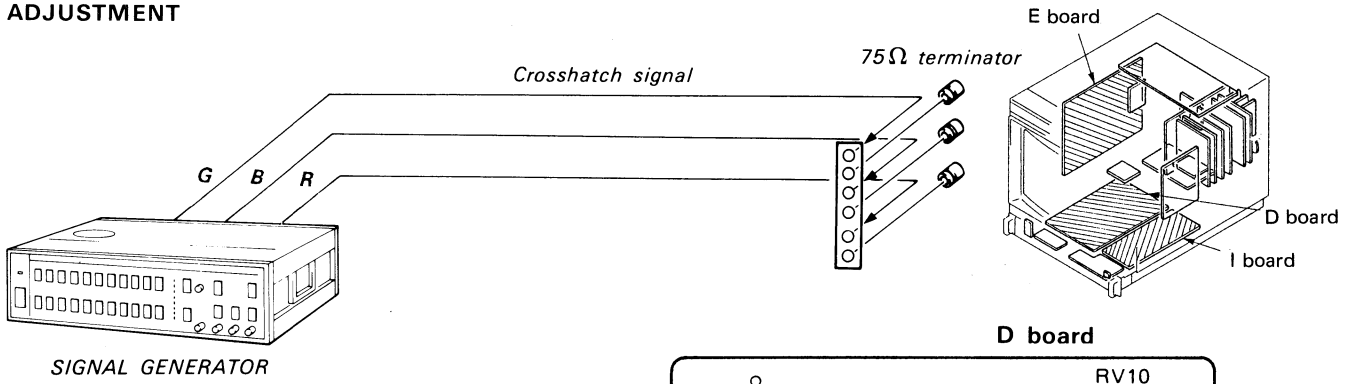
H BLK PHASE (RV76)

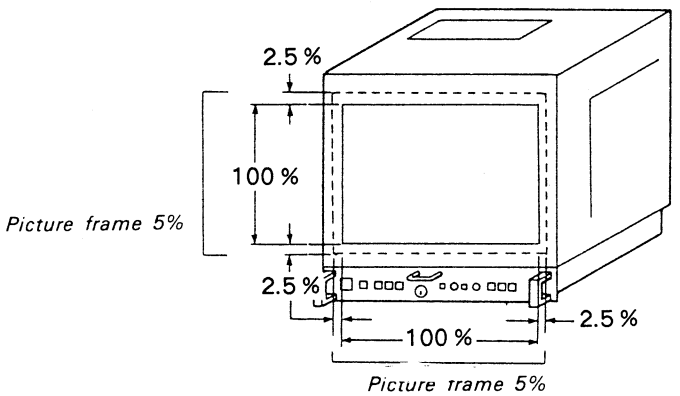
No adjustment is necessary for other systems.

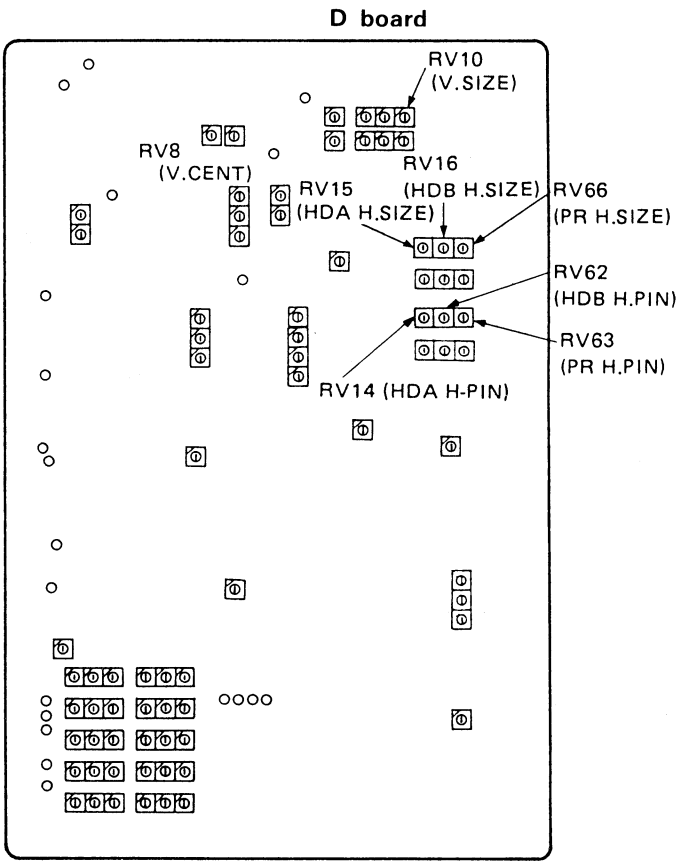
D board



D BOARD HORIZONTAL AND VERTICAL SIZES ADJUSTMENT

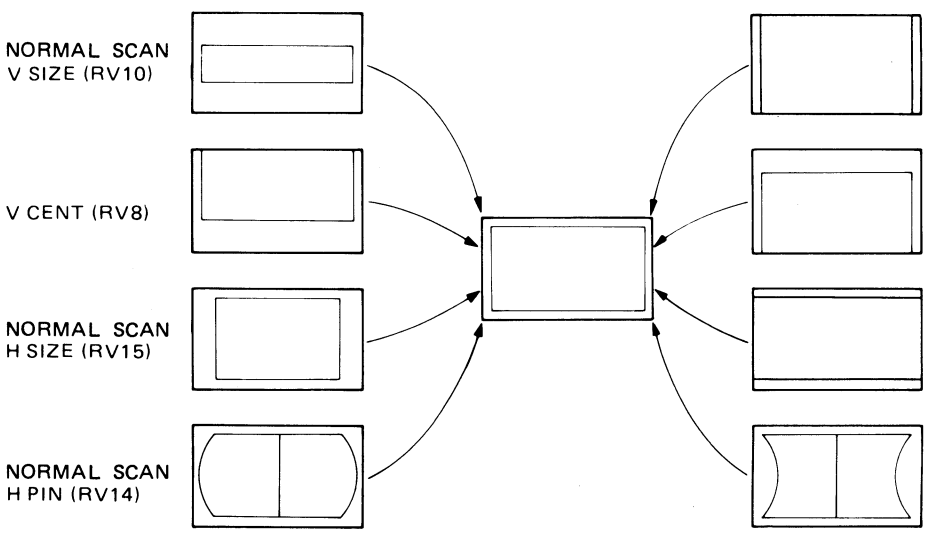




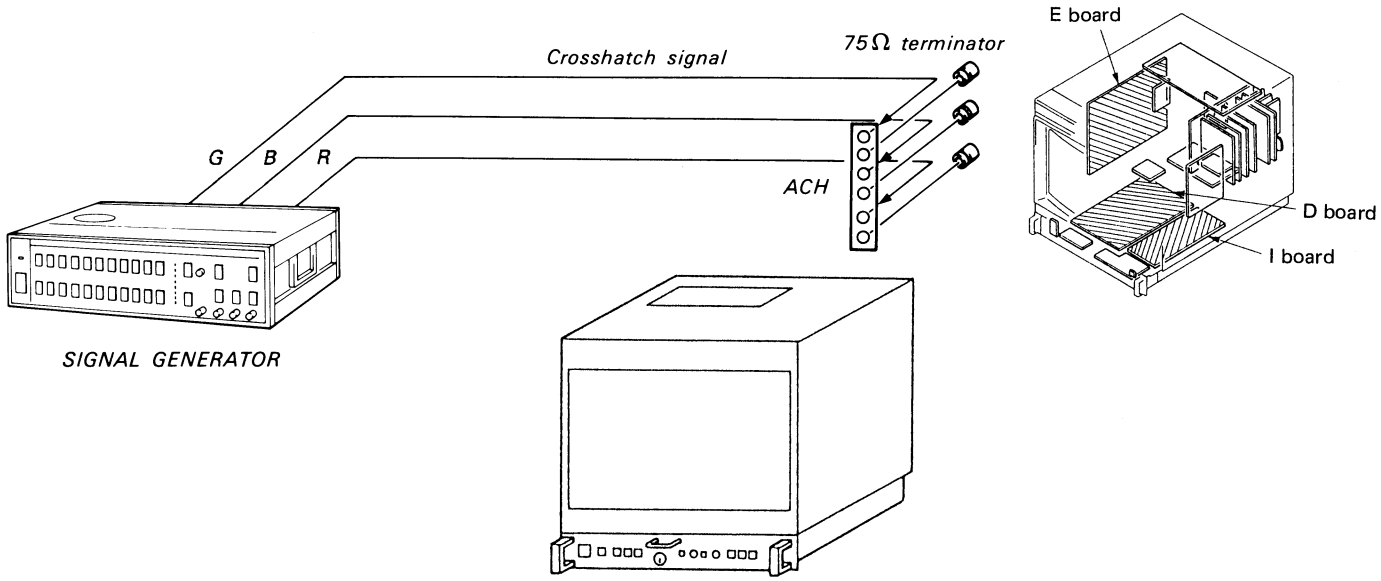


Set to the HDTV A.

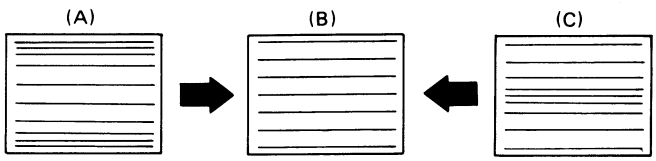
1. Input crosshatch signal (internal or external signal).
2. Shorten the V size a little with V SIZE (RV10) on the D board, and match CENTER (RV8). Return V SIZE to the original.
3. Adjust the scanning with HDA H SIZE (RV15), HDA H PIN (RV14) and V SIZE (RV10) so that it exceeds the picture frame by 5%.
4. Set to the HDTV B and perform similar adjustments with HDB H SIZE (RV16) and HDB H PIN (RV62).
5. Set to PROG. Now, adjust so that the 5% H overscanning of V has a 4:3 aspect ratio. PR H SIZE (RV66) PR H PIN (RV63).



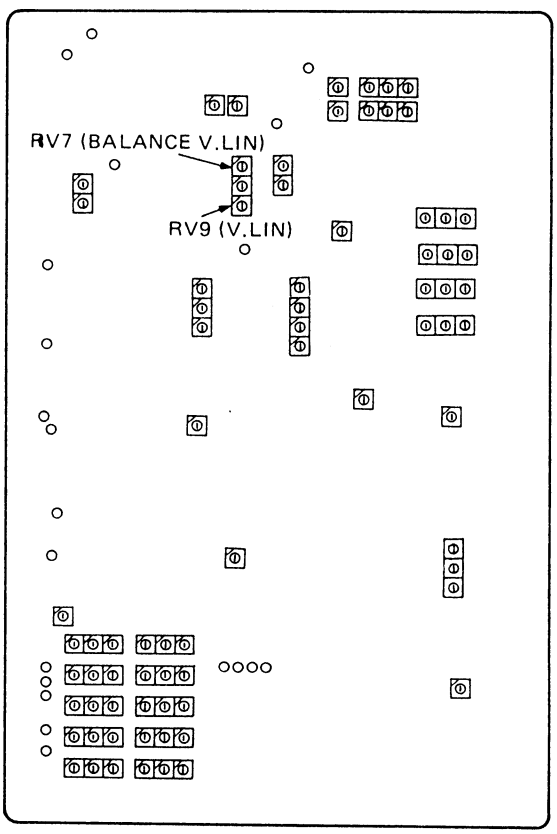
D BOARD VERTICAL LINEARITY ADJUSTMENT



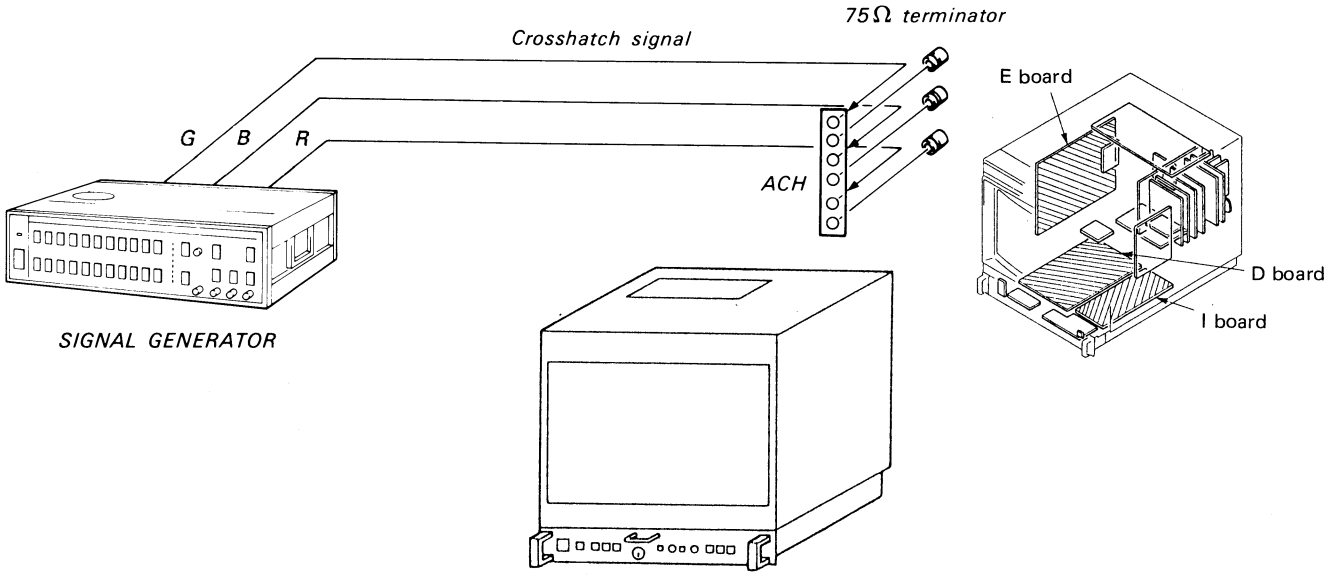
1. Input crosshatch signal (internal or external signal).
2. Turn V AMP (RV9) on the D board fully counterclockwise.
3. Make the upper and lower sections become in symmetry with V LIN PHASE (RV7) (A).
4. Match the linearity so that it becomes at regular intervals overall with V LIN AMP (RV9) (A) (B) (C).



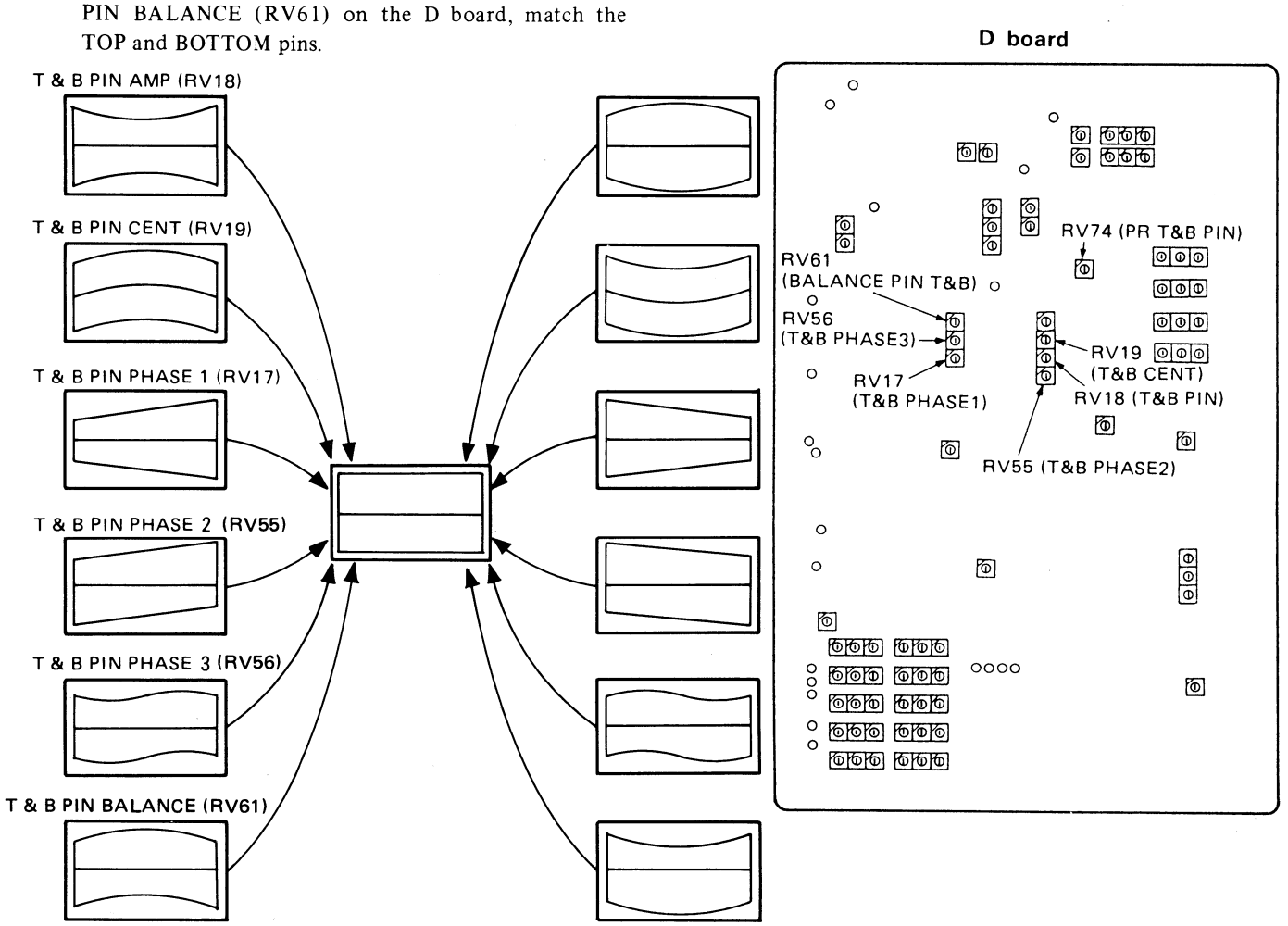
D board



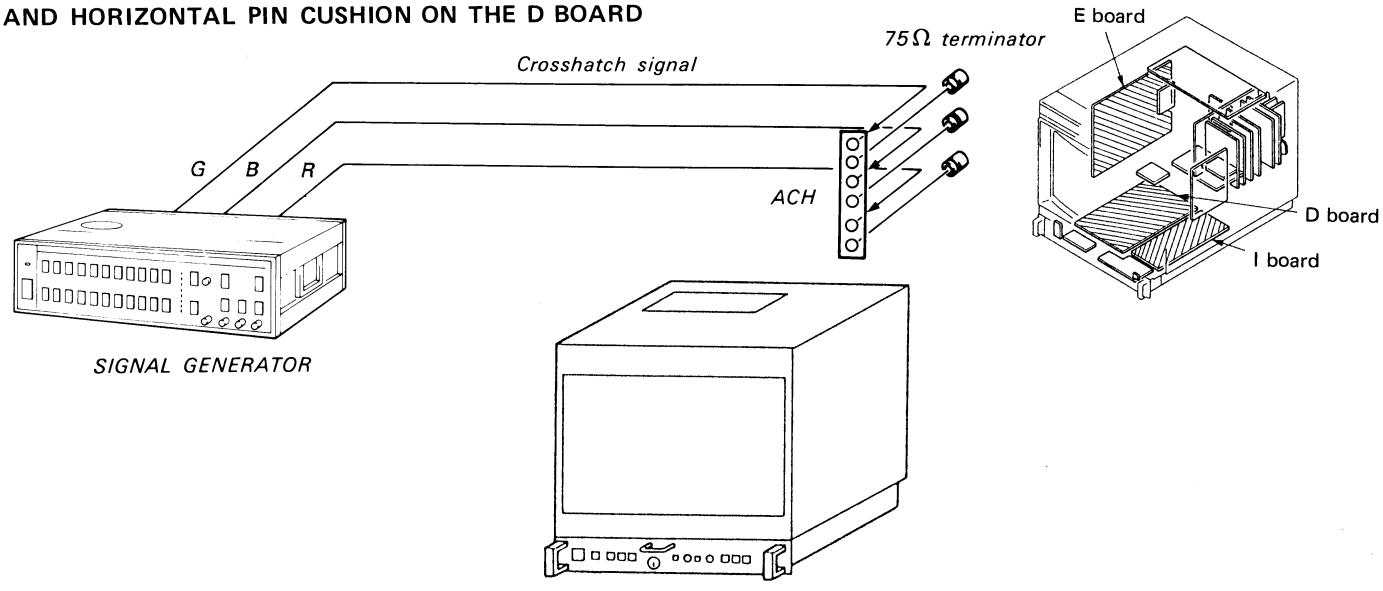
ADJUSTMENT OF TOP AND BOTTOM PINS ON THE D BOARD



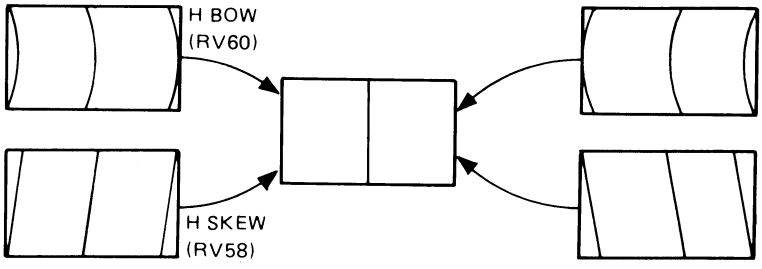
1. Input crosshatch signal (internal or external signal).
2. While engaging tracking of T & B PIN AMP (RV18), T & B PIN CENT (RV19), T & B PIN PHASE 1 (RV17), T & B PHASE 2 (RV55), T & B PIN PHASE 3 (RV56) and T & B PIN BALANCE (RV61) on the D board, match the TOP and BOTTOM pins.
3. Set to PROG and adjust the top and bottom pins with PR T&B PIN (RV74).



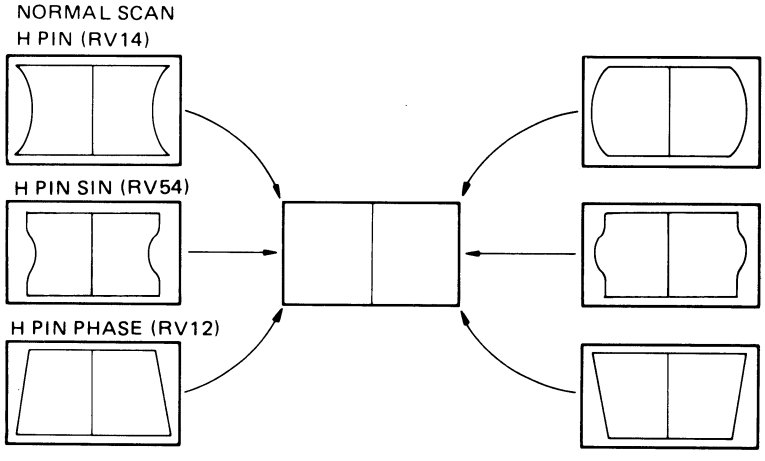
ADJUSTMENT OF DISTORTION OF Y AXIS CENTER AND HORIZONTAL PIN CUSHION ON THE D BOARD



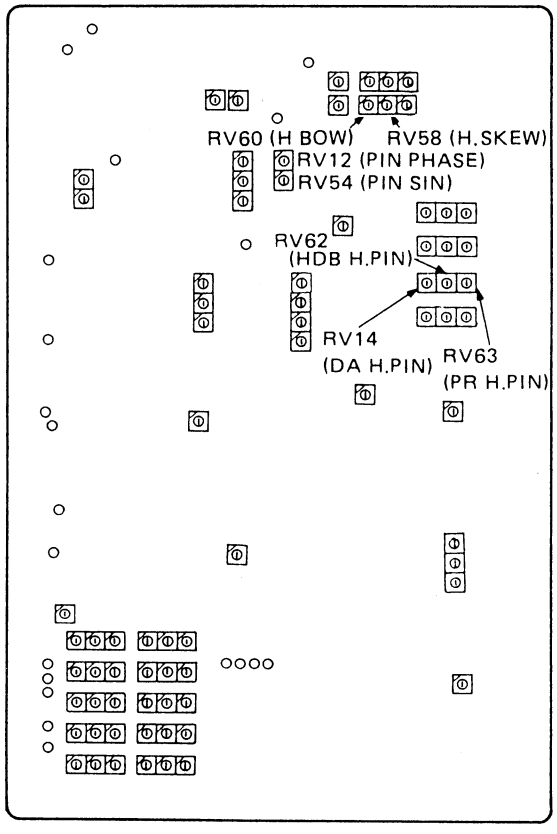
1. Input crosshatch signal (internal or external signal).
2. Adjust Y axis center with H BOW (RV60) and H SKEW (RV58) on the D board.



3. Adjust the distortion of the left and right pins with HDA H PIN (RV14), H PIN SIN (RV54) and H PIN PHASE (RV12).

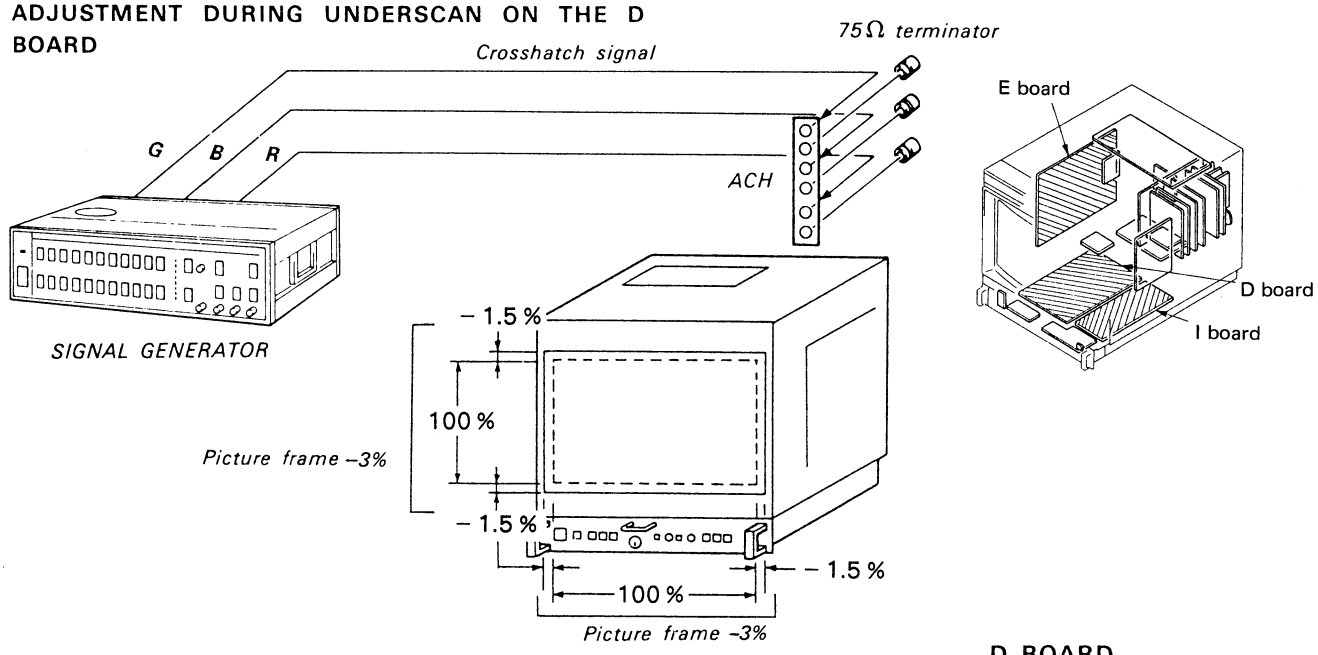


D board



4. Set to HDTV B and adjust the left and right pins with HDB H PIN (RV62).
5. Set to PROG B and adjust the left and right pins with PR H PIN (RV63).

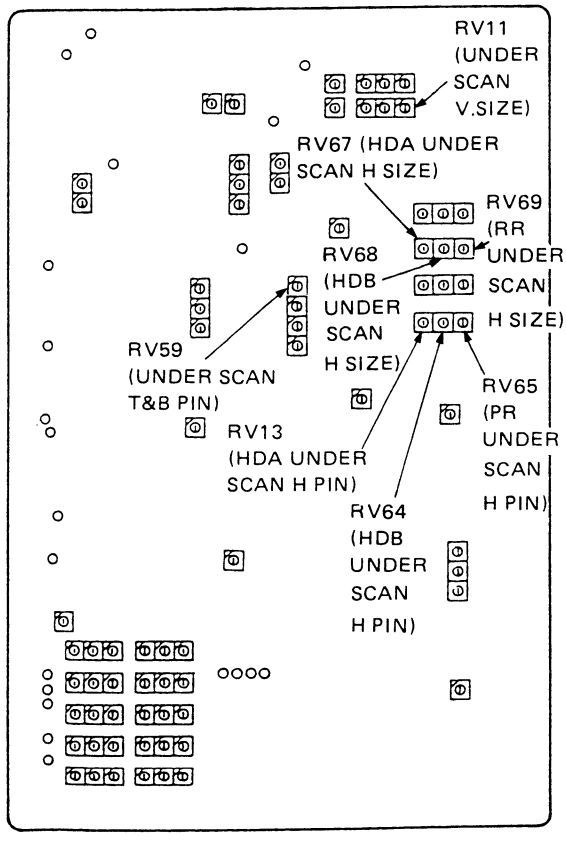
ADJUSTMENT DURING UNDERSCAN ON THE D BOARD

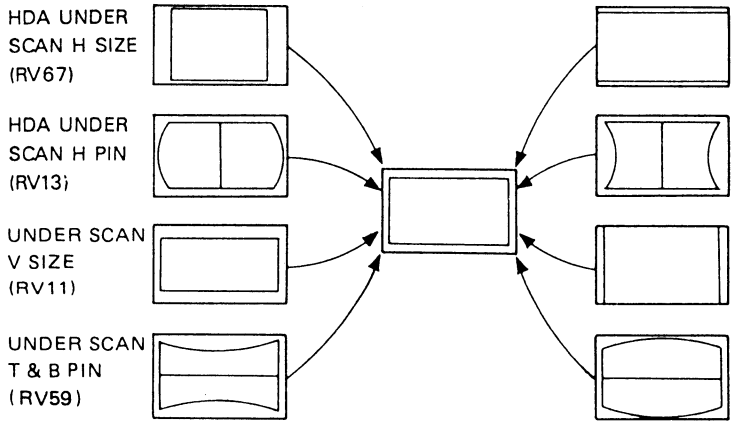


Set to the HDTV A.

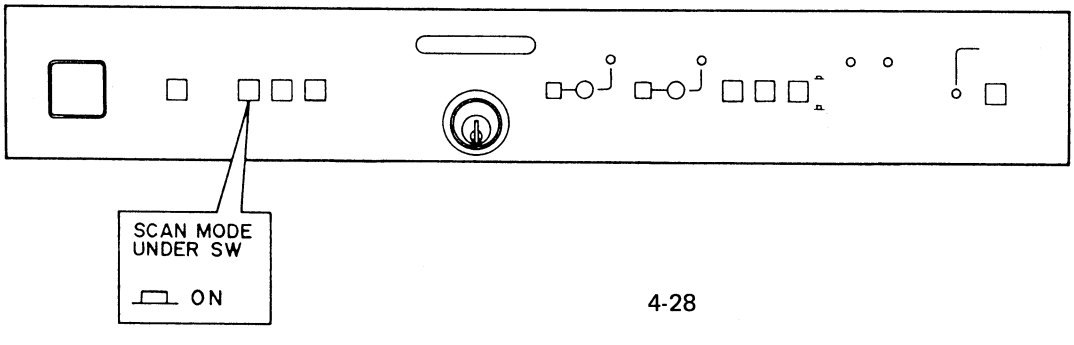
1. Input crosshatch signal (internal or external signal)
2. Turn ON the UNDER SCAN SW of the SCAN MODE SW on the front panel.
3. While engaging tracking of HDA UNDER SCAN H. SIZE (RV67). HDA UNDER SCAN H. PIN (RV13), UNDER SCAN V. SIZE (RV11) and UNDER SCAN T & B PIN (RV59). adjust so that it becomes UNDER SCAN of — 3% of picture frame.
4. Set to the HDTV SYSTEM B mode, and adjust with HDB UNDER SCAN H. SIZE (RV68) and HDB UNDER SCAN H. PIN (RV64).
5. Set to PROG mode, and adjust with PR UNDER SCAN H. SIZE (RV69) and PR UNDER SCAN H. PIN (RV65) according to the V size of this mode so that a aspect ratio becomes 4:3.

D BOARD

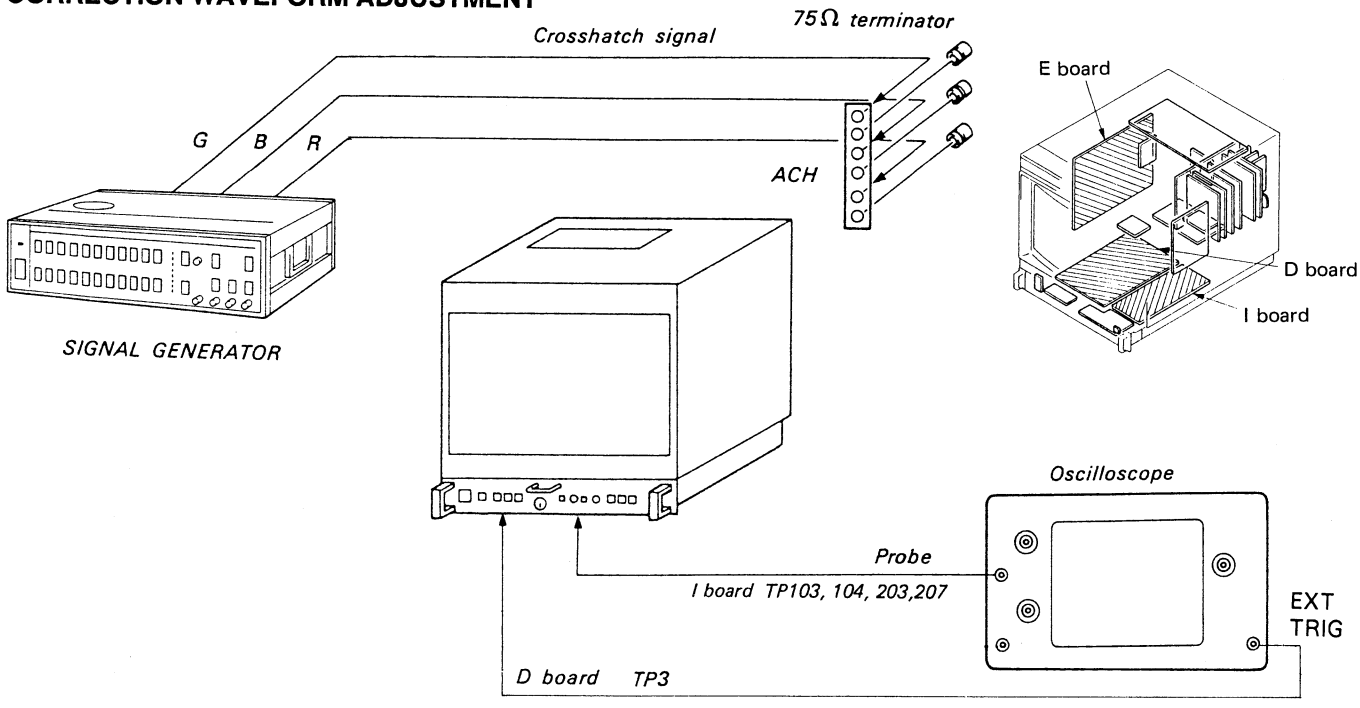




FRONT PANEL



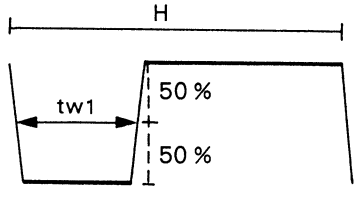
I BOARD SUB CONVERGENCE CORRECTION WAVEFORM ADJUSTMENT



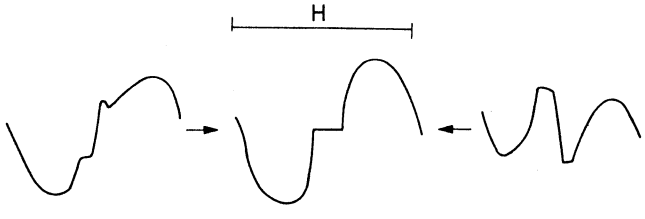
1. Receive the crosshatch signal from internal SG (signal generator) or external SG.
2. Remove D-13 connector of the D board.
3. Apply trigger to oscilloscope by TP-3 (HP) on the D board.

Sub convergence H waveform adjustment

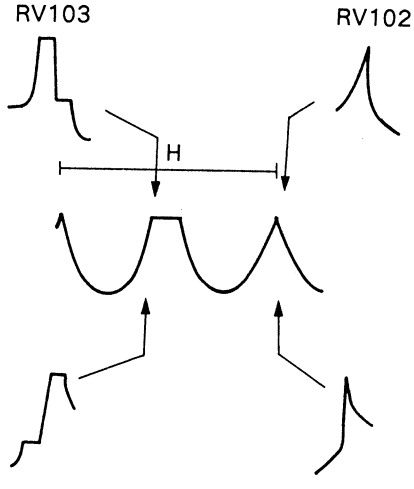
4. Connect the probe to Pin ㉔ of IC102, and adjust RV100 so that tw1 in Fig. 1-11 becomes 10 ± 0.2 μs.



5. Connect the probe to TP103, and adjust RV101 so that the waveform becomes as shown in Fig. 1-12.



6. Turn RV104 and RV105 fully clockwise.
7. Connect the probe to TP104, and adjust RV102 and RV103 so that the waveform becomes as shown in Fig. 1-13.



Sub convergence V waveform adjustment

8. Connect the probe to TP203, adjust RV206 and RV207 so that the waveform becomes as shown in Fig. 1-14.

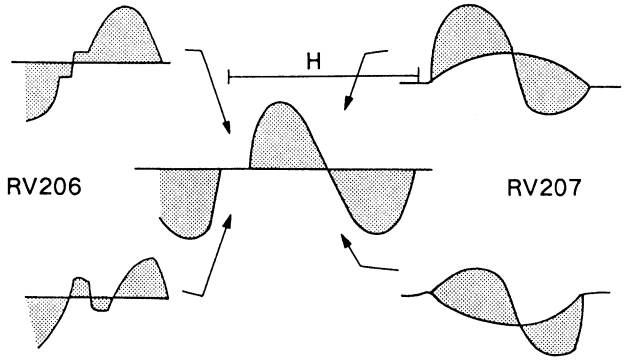
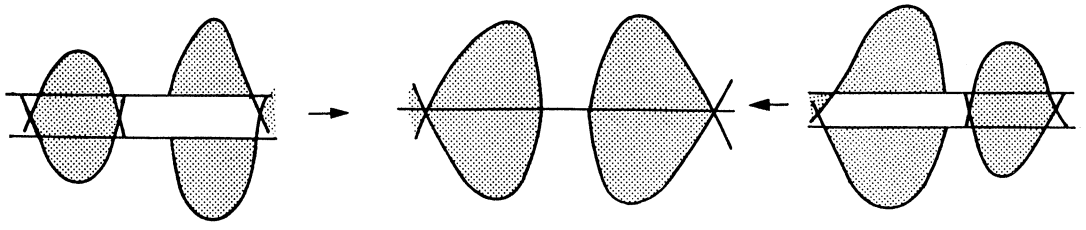
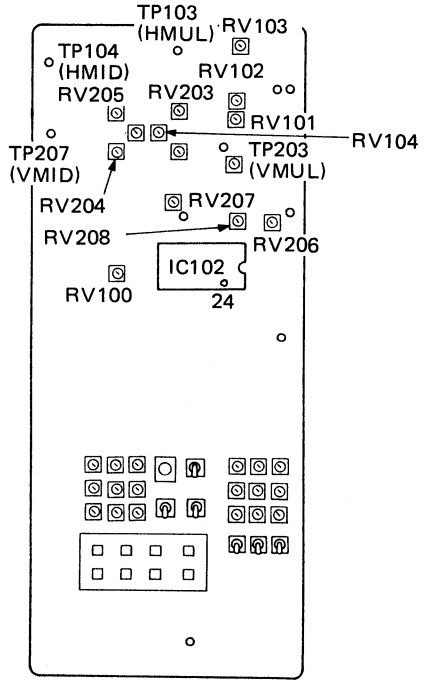


図 1-14

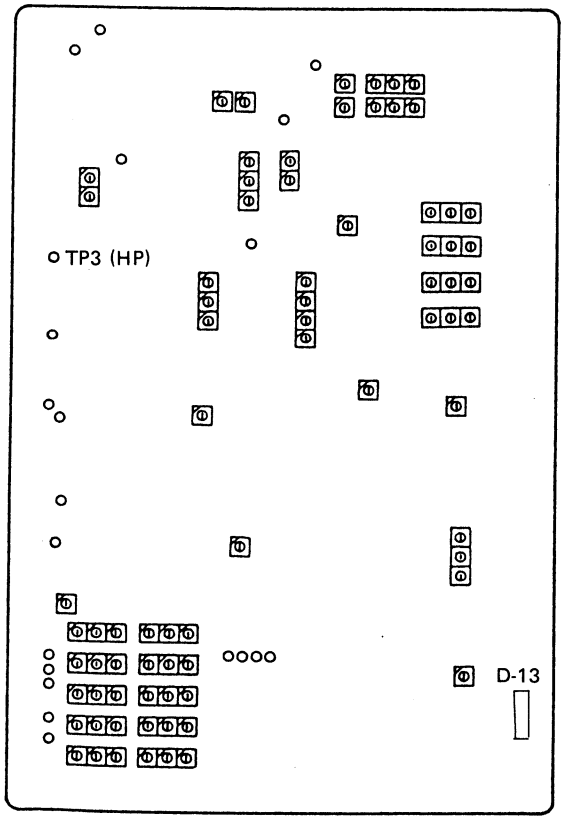
9. Turn RV203 and RV205 fully clockwise and RV202 and RV204 fully counterclockwise.
10. Connect the probe to TP207, and adjust RV208 so that the waveform becomes as shown in Fig. 1-15.



I board

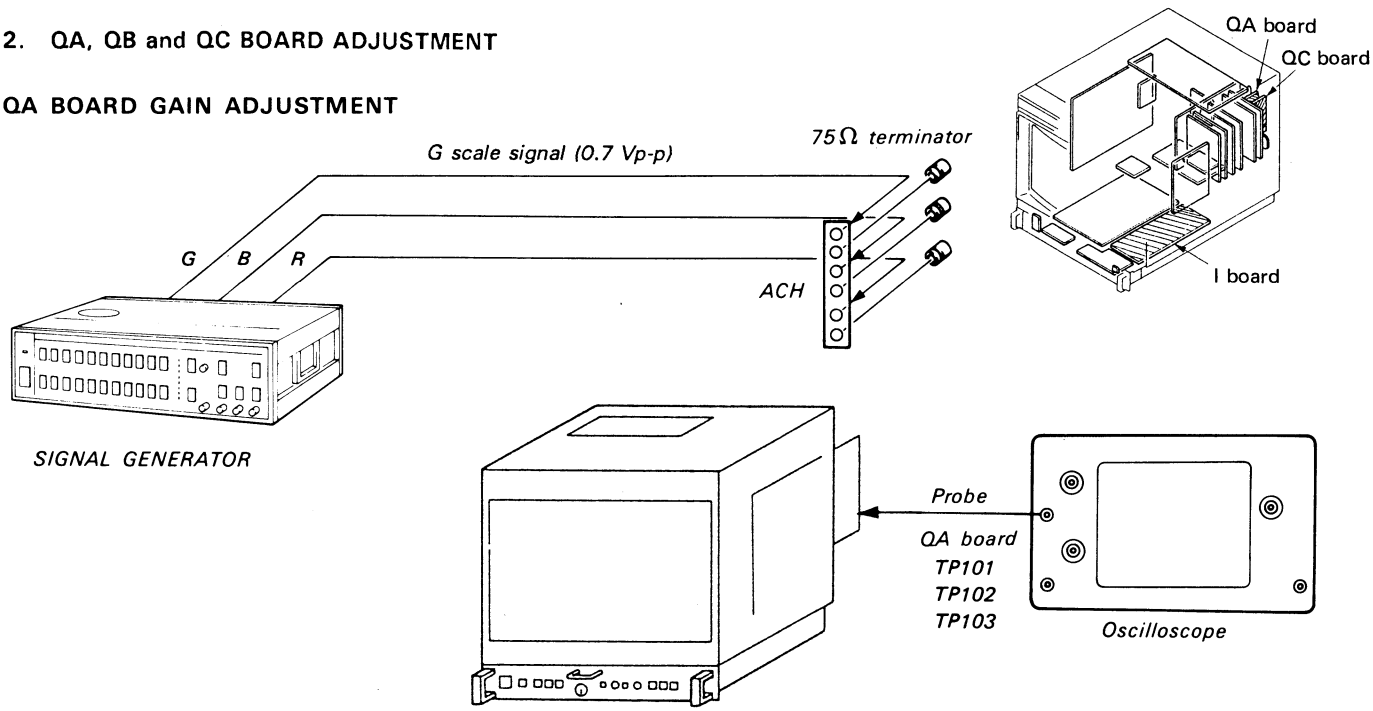


D board

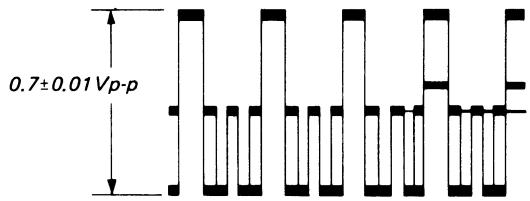


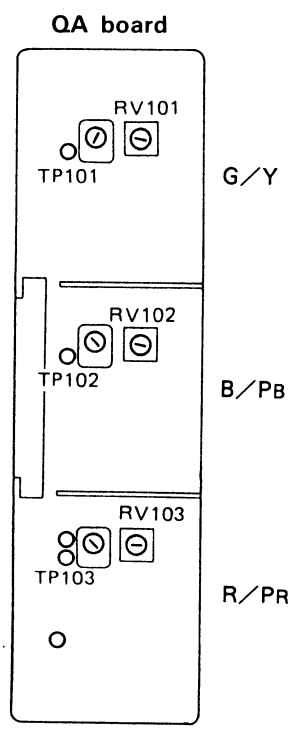
2. QA, QB and QC BOARD ADJUSTMENT

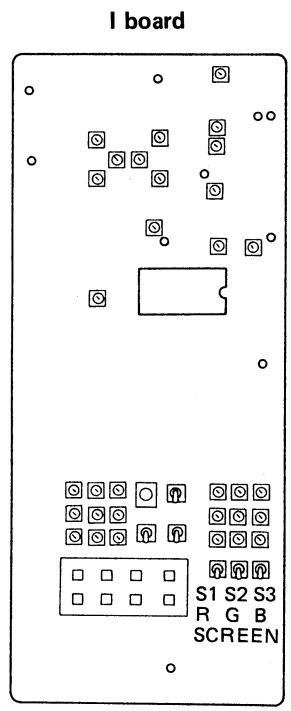
QA BOARD GAIN ADJUSTMENT



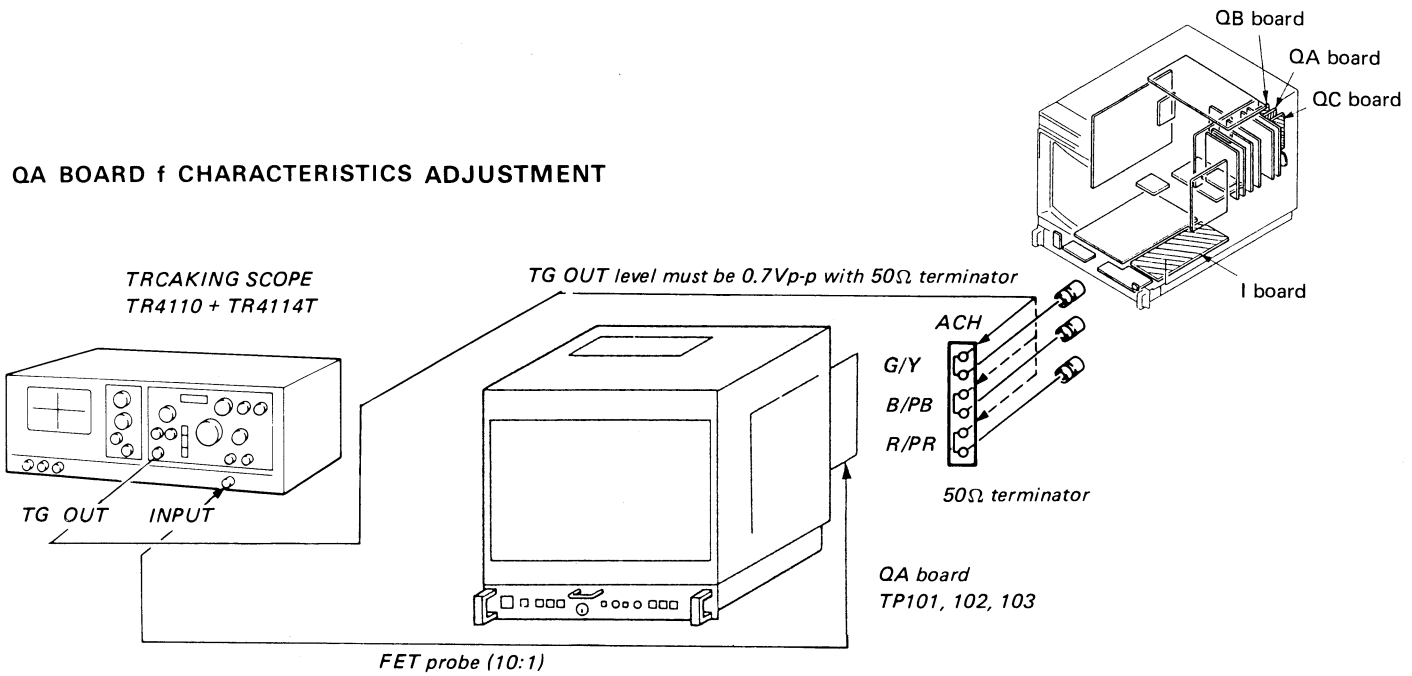
1. Remove the QC board.
2. Input the G SCALE signal.
3. Turn off all the screen swiches on the I board.
4. Adjust the video signal level (excluding the SYNC signal level) section of the TP101, TP102 and TP103 on the QA board to 0.7 ± 0.01 Vp-p using RV101, RV102 and RV103.







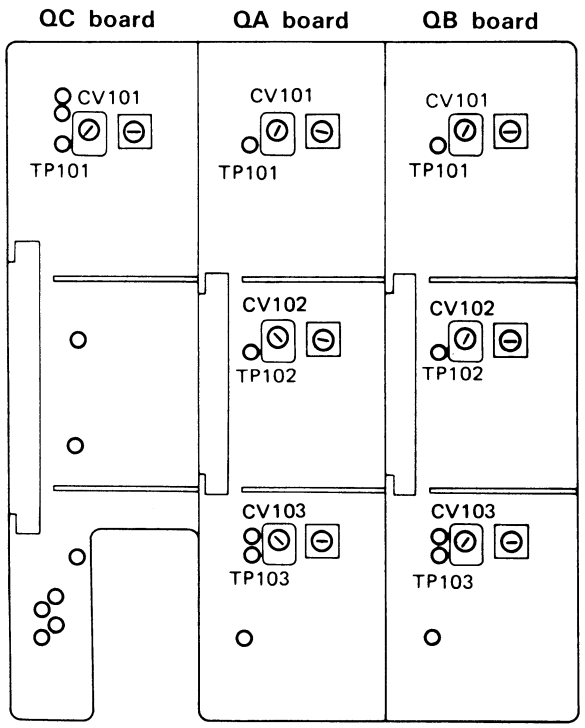
QA BOARD f CHARACTERISTICS ADJUSTMENT



1. Turn off all the screen swiches on the I board.
2. Input the output signal of the tracking generator to the GREEN/Y terminal. Match the f characteristics of TP101 with CV101 to ±0.5 dB in the range of 60 to 30 MHz.
3. Input the output signal of tracking generator to the BLUE/P_B terminal. Match the f characteristics of TP102 with CV102 to ±0.5 dB in the range of 60 to 30 MHz.
4. Input the output signal of tracking generator to the RED/P_R terminal. Match the f characteristics of TP103 with CV103 to ±0.5 dB in the range of 60 to 30 MHz.

[QB BOARD GAIN ADJUSTMENT]

Input the signal to the QB board. Other measurements are the same with that on the QA board gain adjustment.



[QB BOARD f CHARACTERISTICS ADJUSTMENT]

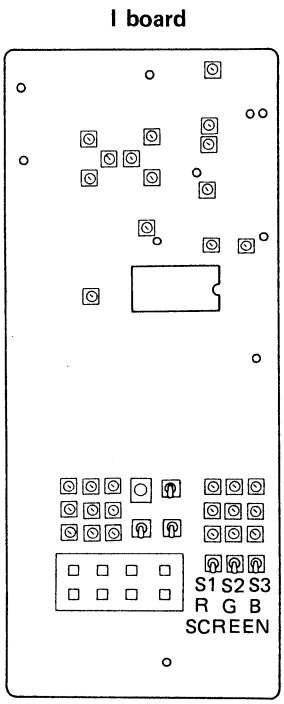
Input the signal to the QB board.Other measurements are the same with that on the QA board f characteristics adjustment.

[QC BOARD GAIN ADJUSTMENT]

Input signal to EXT SYNC on QC board. TP is 101 and RV is 101 and other measurements are the same with that on the QA board gain adjustment.

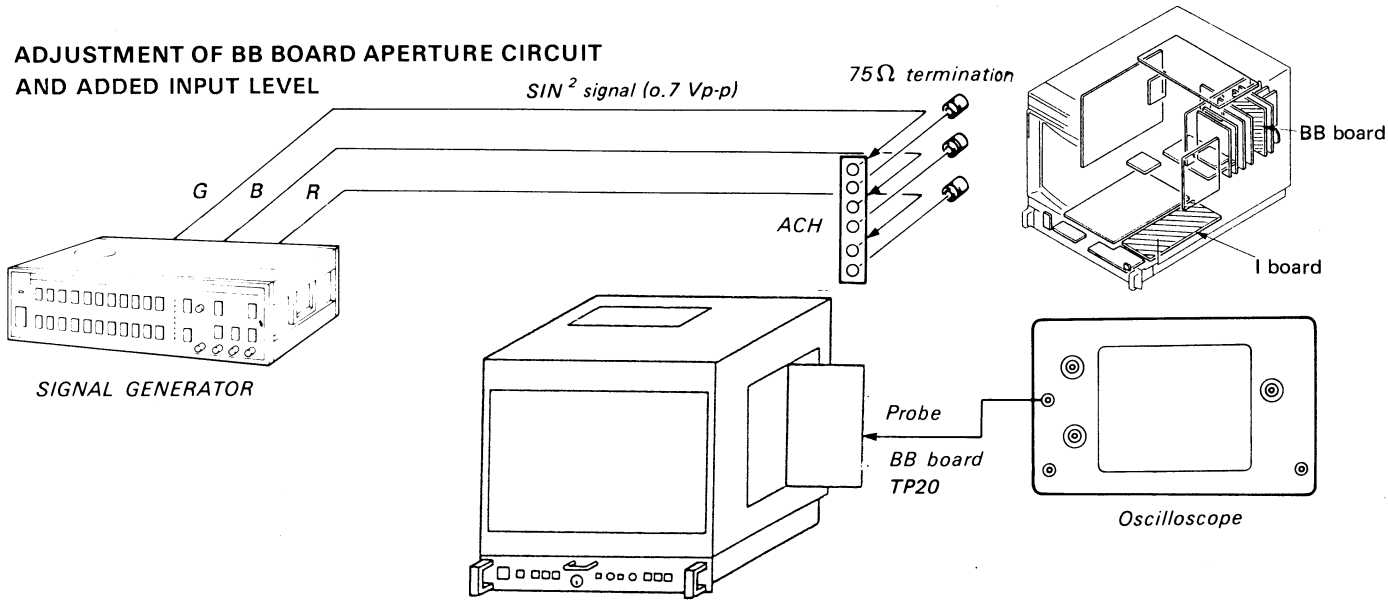
[QC BOARD f CHARACTERISTICS ADJUSTMENT]

Input the signal to EXT SYNC on the QC board. TP is 101 and RV is 101, match to adjustment range of ± 1 dB. Other measurements are the same with that on the QA board f characteristics adjustment.

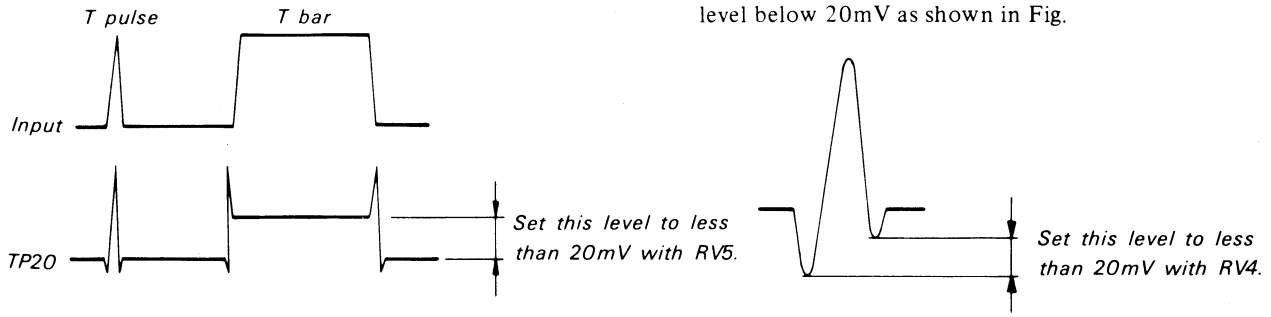


3. BB BOARD ADJUSTMENT

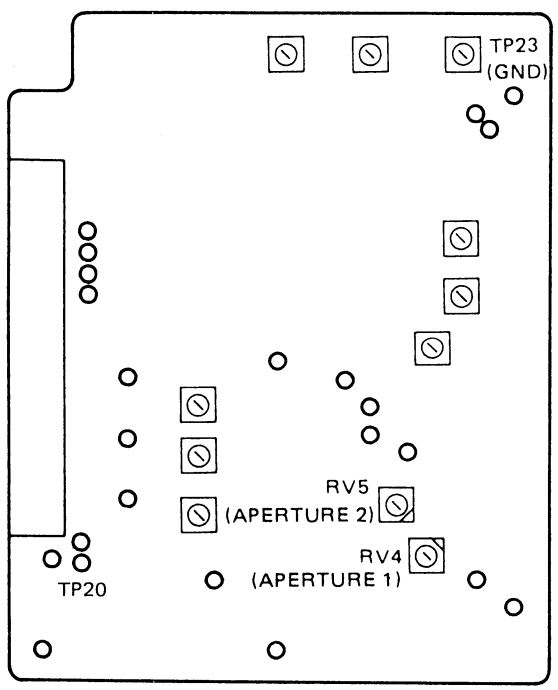
ADJUSTMENT OF BB BOARD APERTURE CIRCUIT AND ADDED INPUT LEVEL



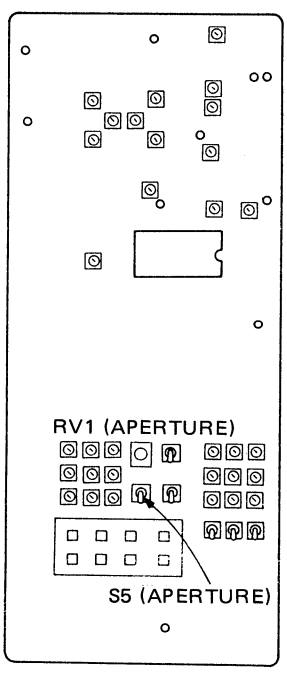
1. Input the SIN^2 signal.
2. Set the APERTURE SW on the I board to ON.
3. Set the APERTURE VR to maximum.
4. Cut off all RED, GREEN and BLUE on I board.
5. Connect YH (TP20) of the BB board to an oscilloscope.
6. Adjust with RV4 and RV5 of the BB board to make the level below 20mV as shown in Fig.



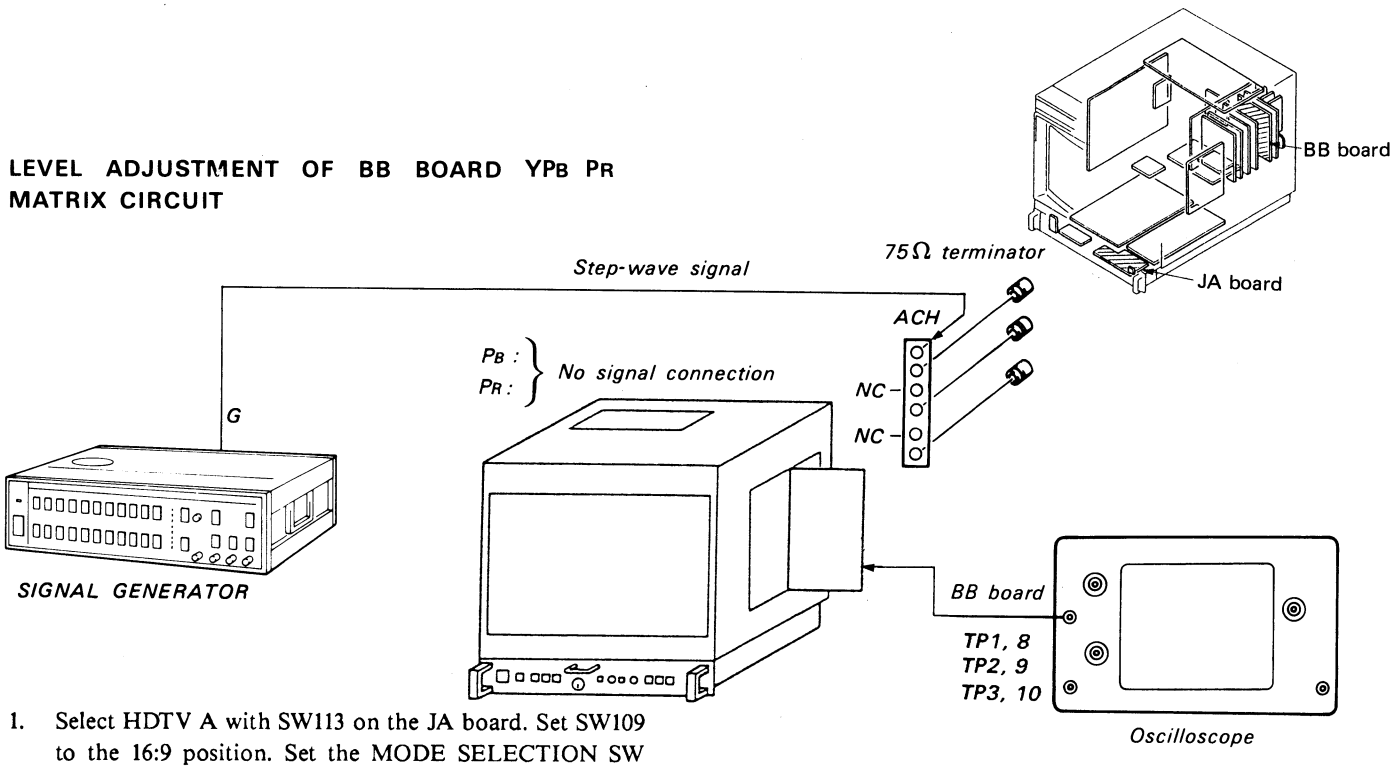
BB board



I board



LEVEL ADJUSTMENT OF BB BOARD $Y P_B P_R$ MATRIX CIRCUIT

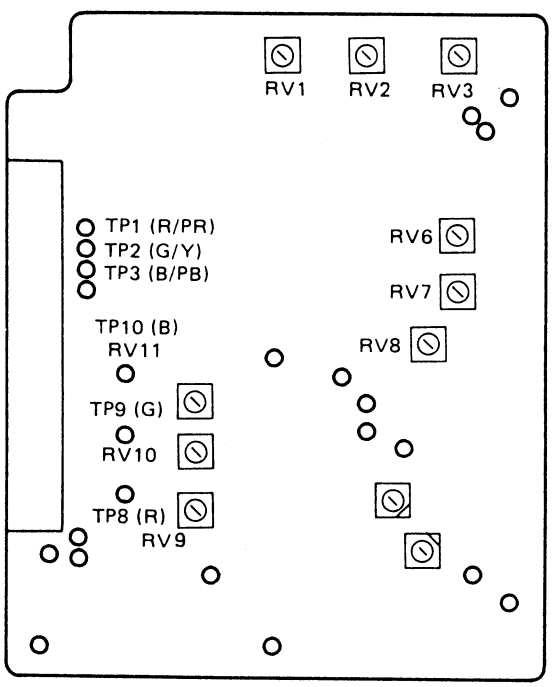


1. Select HDTV A with SW113 on the JA board. Set SW109 to the 16:9 position. Set the MODE SELECTION SW (COLOR/B&W) on the front panel to the COLOR position.

[LEVEL ADJUSTMENT OF RGB AND Y]

2. Remove J1 and J2 from the BB board.
3. Set SW102 on the JA board to the GBR position and measure the AMPLITUDE VR1 of R OUT (TP8) in the RGB mode.
4. Set SW102 on the JA board to the Y PB PR position and adjust RV1 so that amplitude of R OUT (TP8) in Y PB PR mode becomes VR1 ± 10 mVp-p.
5. Adjust G OUT and B OUT in the same manner as R OUT.
   G OUT TP9, RV2
   B OUT TP10, RV3
6. Change over SW102 on the JA board and confirm that the screen colors do not change in RGB mode and Y PB PR mode. If colors change, repeat all steps starting from step 3.
7. Insert back J1 and J2.

BB board



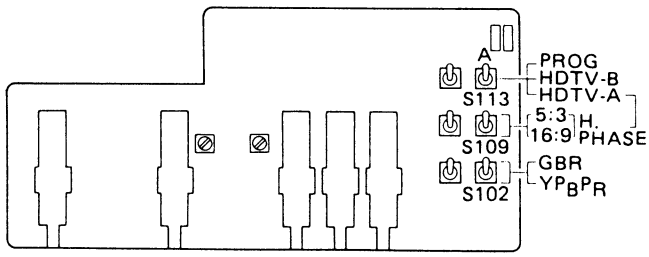
[LEVEL ADJUSTMENT OF RGB AND B&W]

8. Set SW102 on the JA board to the RGB position.
9. Set the MODE SELECTION SW (COLOR/B&W) on the front panel to the B&W position and measure amplitude VR2 of R OUT (TP8) in B&W mode.
10. Set MODE SELECTION SW (COLOR/B&W) on the front panel to COLOR position and adjust RV6 so that amplitude of R OUT (TP8) in the COLOR mode becomes VR2 ± 10 Vp-p.
11. Adjust G OUT and B OUT in the same manner as R OUT.
    G OUT TP9, RV7
    B OUT TP10, RV8
12. Change over the MODE SELECTION SW (COLOR/B&W) on the front panel and confirm that the colors on the screen are the same in both RGB mode and B&W mode.
    If they have changed, repeat all steps starting from step 8.

[LEVEL ADJUSTMENT OF RGB]

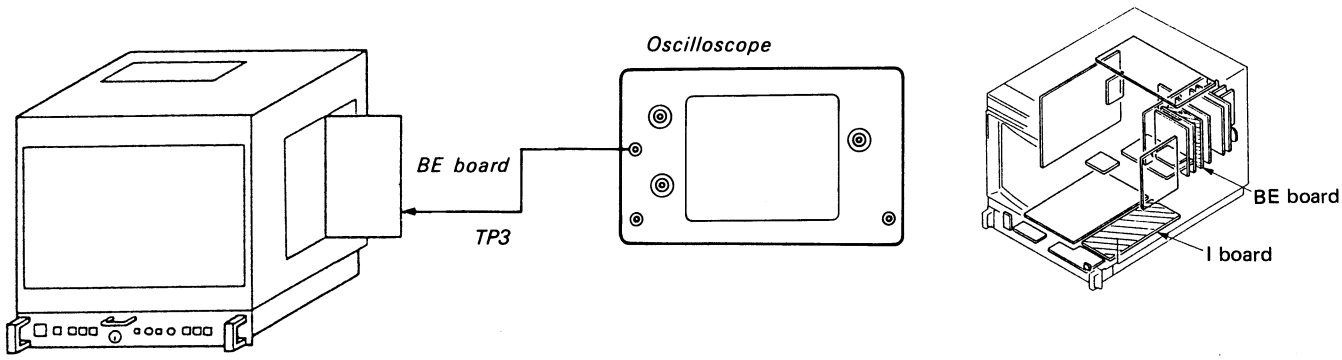
13. Set SW102 on the JA board to RGB, and the MODE SELECTION SW (COLOR/B&W) on the front panel to COLOR.
14. Measure amplitude VR3 of R IN (TP1).
15. Adjust RV9 so that amplitude of R OUT (TP8) becomes VR3 ± 10 mVp-p.
16. Adjust G OUT and B OUT in the same manner.
    G ..... TP2 (G IN), TP9 (G OUT), RV10
    B ..... TP3 (B IN), TP10 (B OUT), RV11

JA board

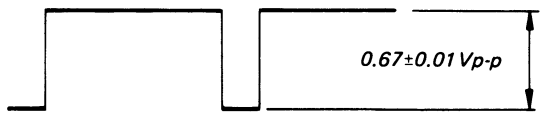


5. BE BOARD ADJUSTMENT

BE BOARD VIDEO OUT LEVEL ADJUSTMENT

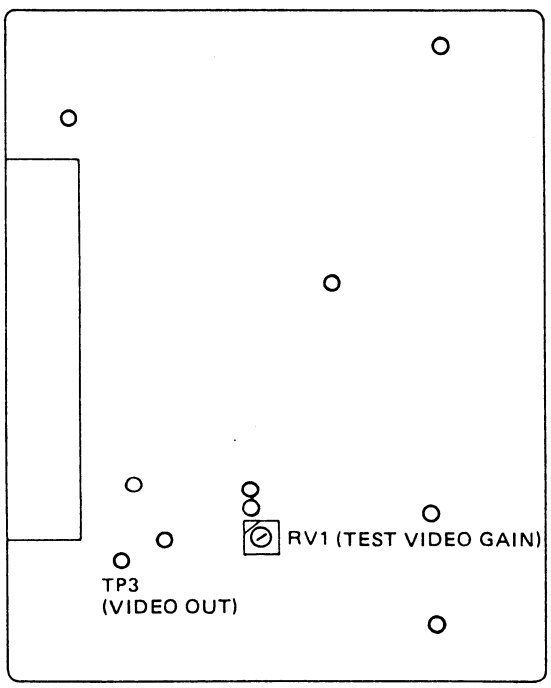


1. Select FLAT FIELD by SIGNAL SELECT button on the I board.

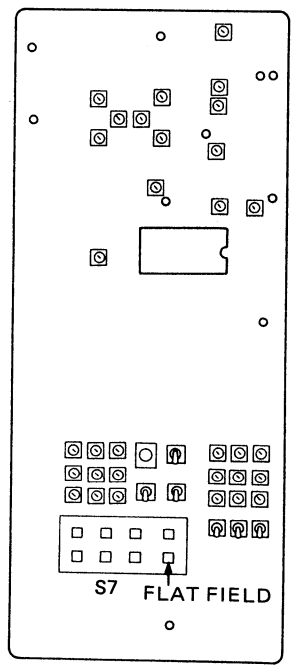


2. Connect an oscilloscope to TP3 (VIDEO OUT) of the BE board and adjust RV1 (TEST VIDEO GAIN) so that the level becomes 0.67±0.01 Vp-p.

BE board

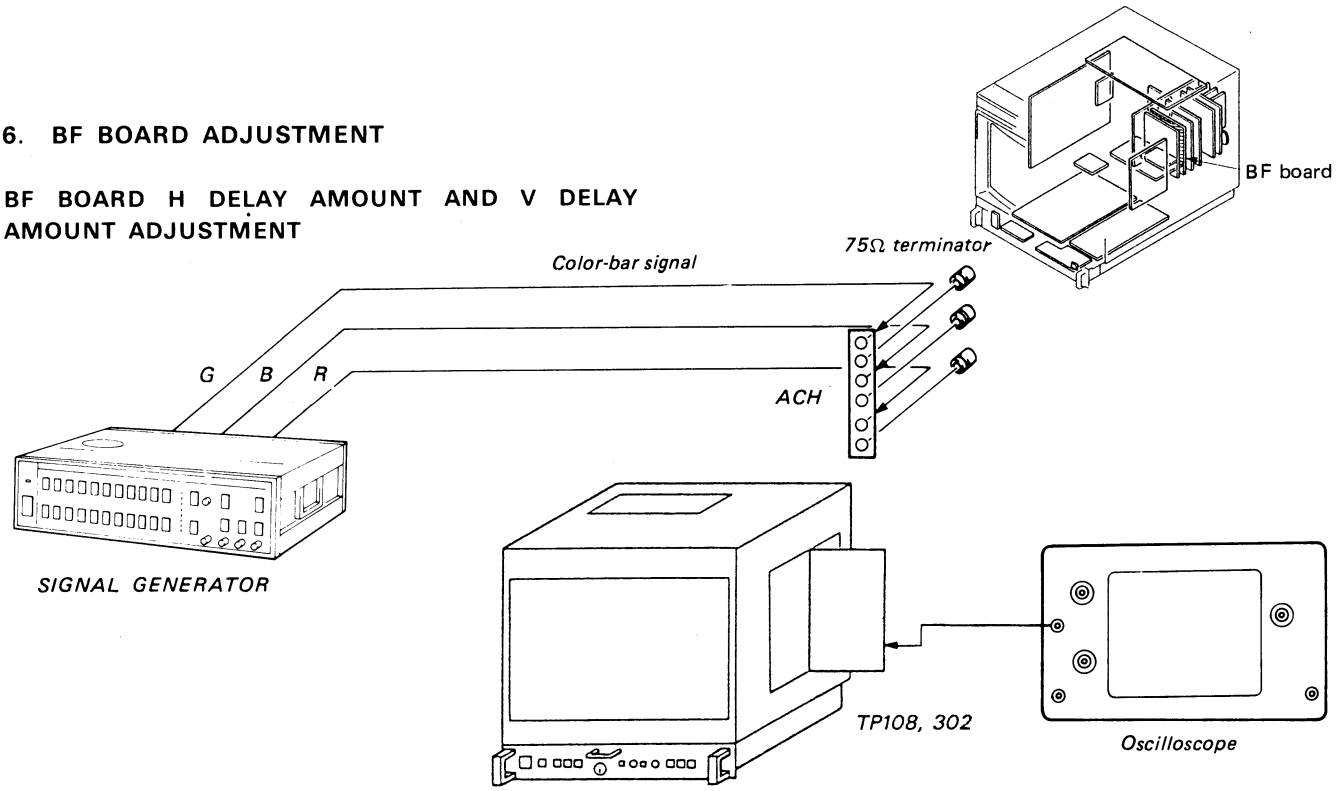


I board



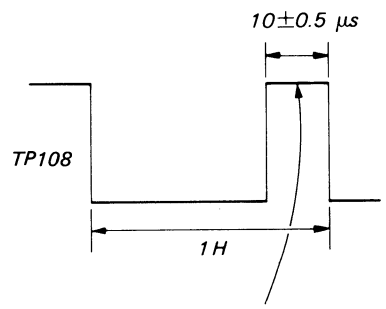
6. BF BOARD ADJUSTMENT

BF BOARD H DELAY AMOUNT AND V DELAY AMOUNT ADJUSTMENT



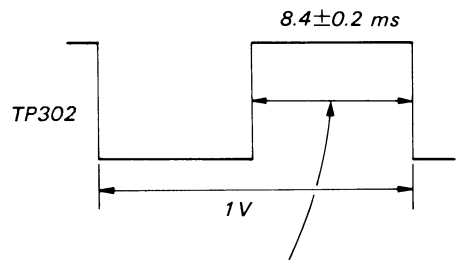
1. Input the color bar signal.
2. Monitoring TP108 on the BF board with an oscilloscope, turn ON the H DELAY SW and adjust the H DELAY (RV102) on the BF board so that the pulse width becomes 10 ± 0.5 μsec.
3. Monitoring TP302 on the BF board with an oscilloscope, turn ON the V DELAY SW and adjust the V DELAY (RV301) on the BF board so that the pulse width becomes 8.4 ± 0.2 msec.

H Delay Amount Adjustment



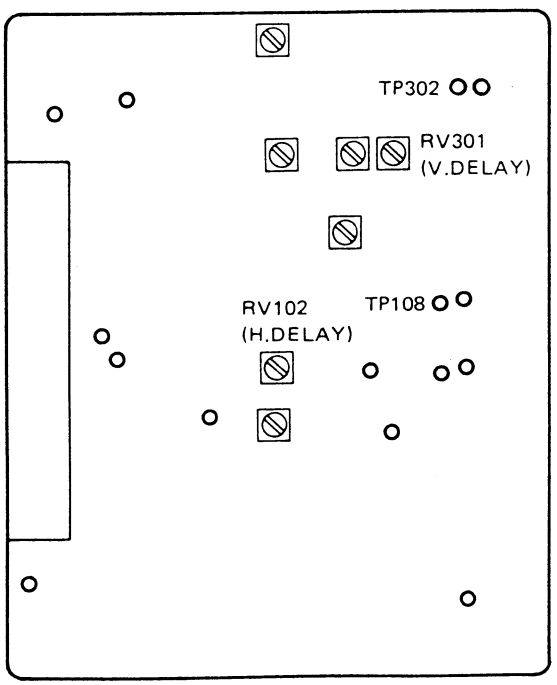
Adjust the pulse width to 10 ± 0.5 μsec with RV102.

V Delay Amount Adjustment

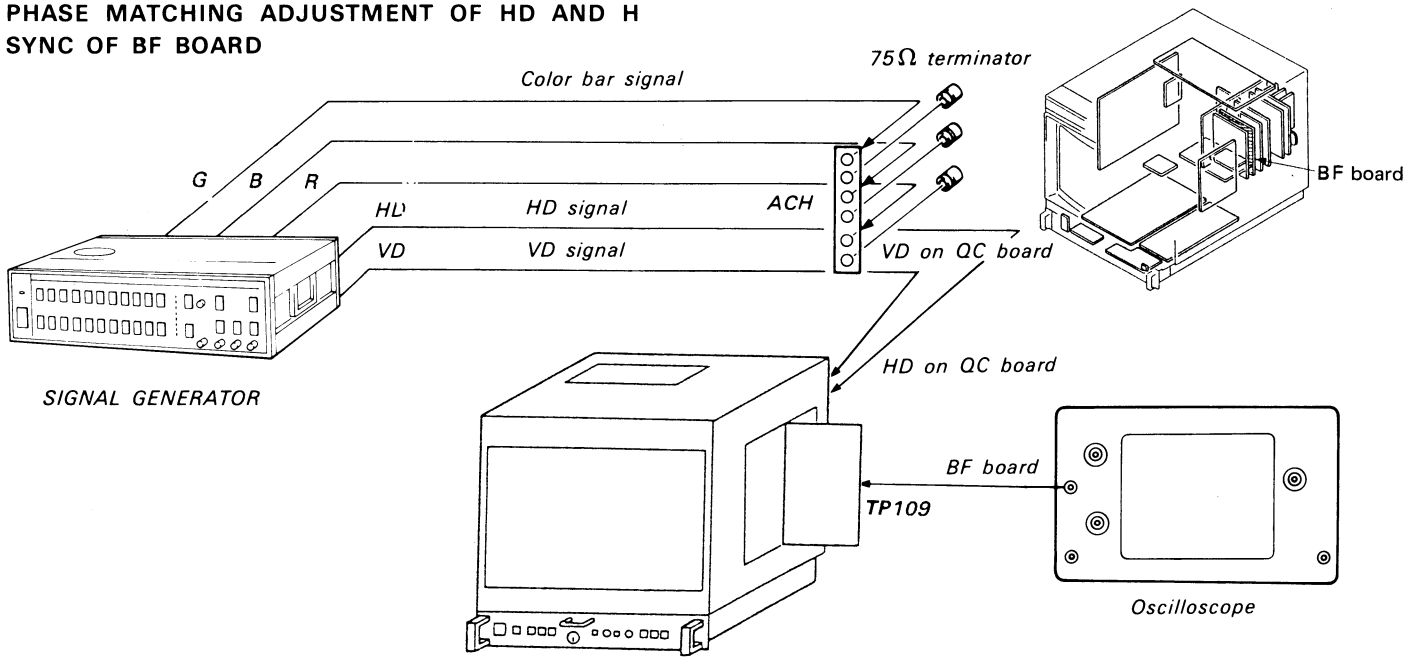


Adjust the pulse width to 8.4 ± 0.2 msec with RV301.

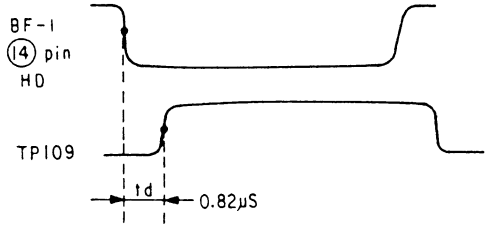
BF board



PHASE MATCHING ADJUSTMENT OF HD AND H SYNC OF BF BOARD

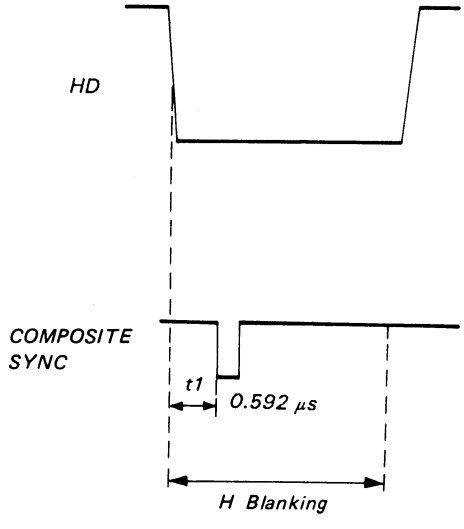


1. Input the color bar signal.
2. Monitoring the pin ⑭ connector BF-1 and TP109 on the BF board with oscilloscope, adjust RV101 so that td shown in Fig. blow becomes 0.82 μs. td should be measured the point where amplitude is 50%.

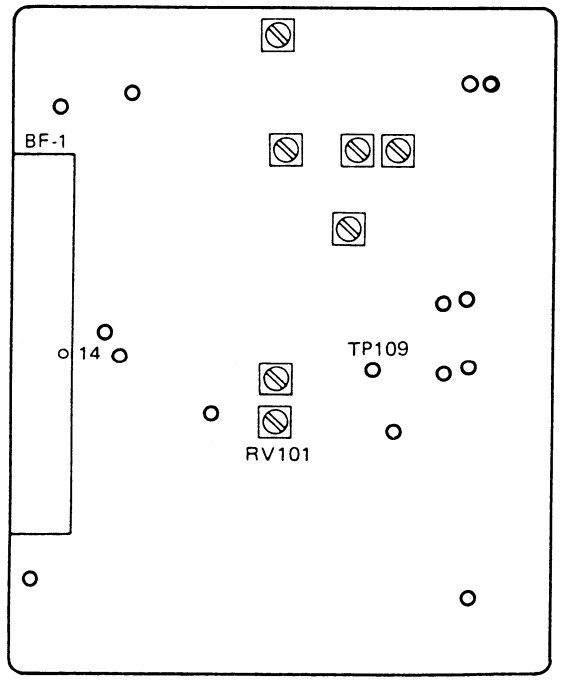


Note: At the time of shipment, input HD and H SYNC as shown in Fig. below and the phase is adjusted.

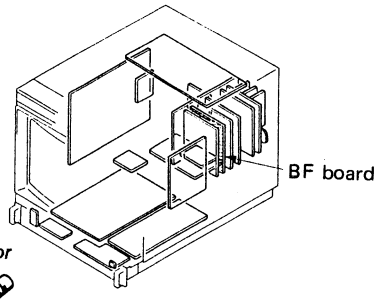
As shown in Fig. below, when different HD signal is input, re-adjust to obtain td = t1 + 0.23 (μs).

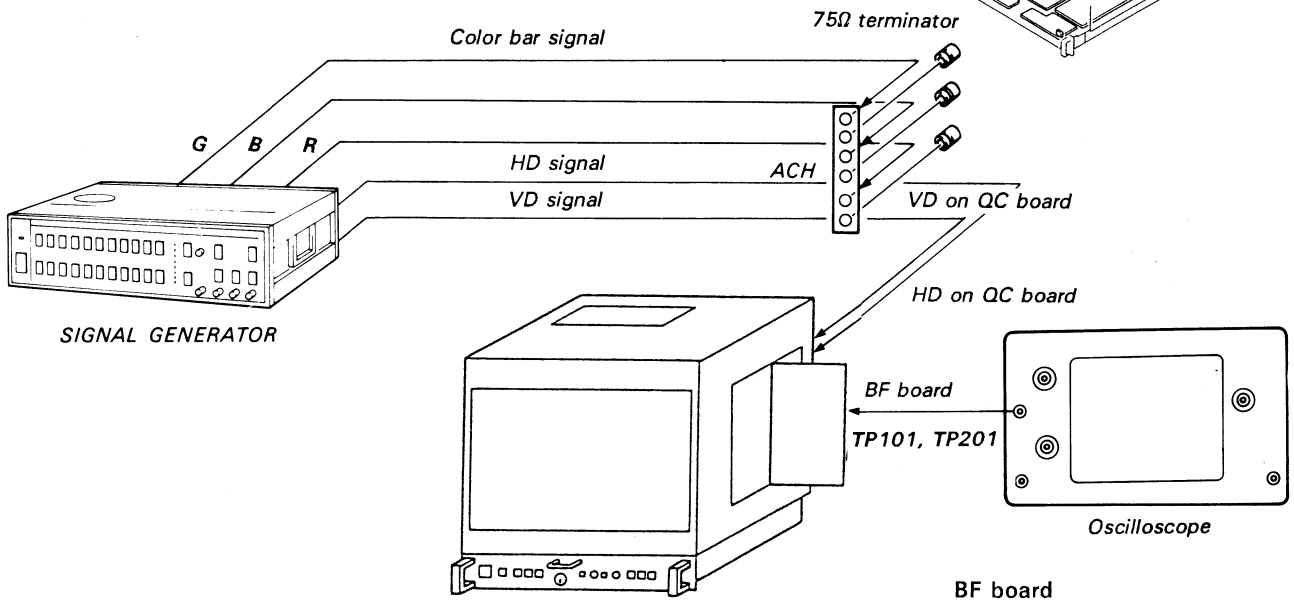


BF board

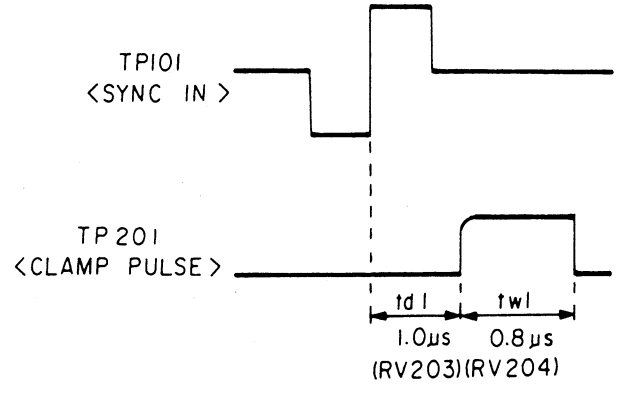


[ADJUSTMENT 1 OF CLAMP PULSE PHASE AND PULSE WIDTH]

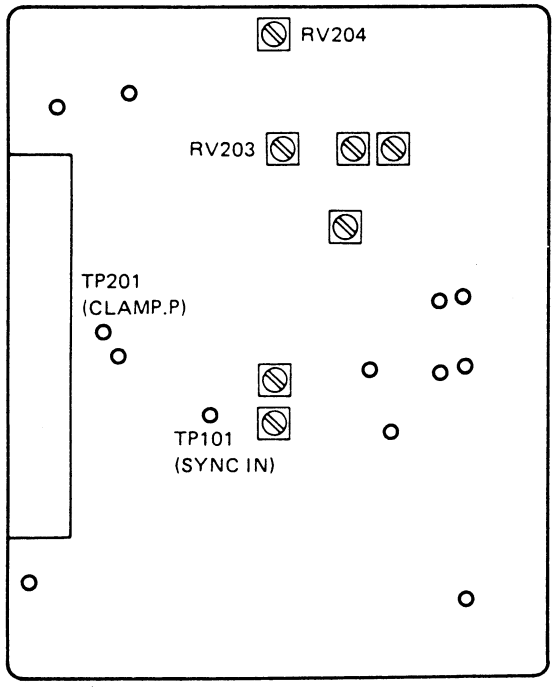




1. Input the color bar signal.
2. Monitoring TP101 and TP201 on the BF board with an oscilloscope, adjust td_1 and tw_1 in Fig. below with RV203 and RV204. td_1 and tw_1 respectively should be the points where amplitude is 50%.



BF board



Note:

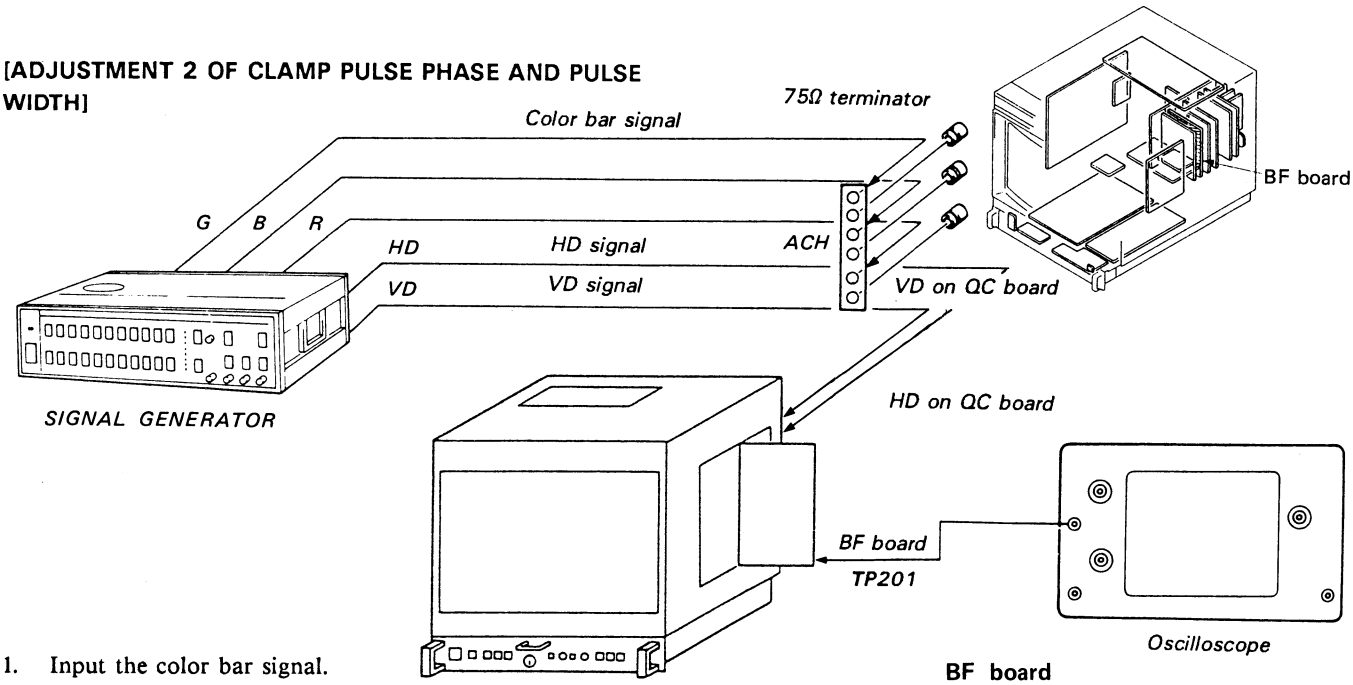
td_1 and tw_1 shown above are the values when the BTA/SMPTE standard for HDTVs and the former HDTV standard (Sony standard or Tsukuba Exposition standard) are input.

When a signal with a back porch of 1.8 μs or less is input, re-adjust to obtain the following.

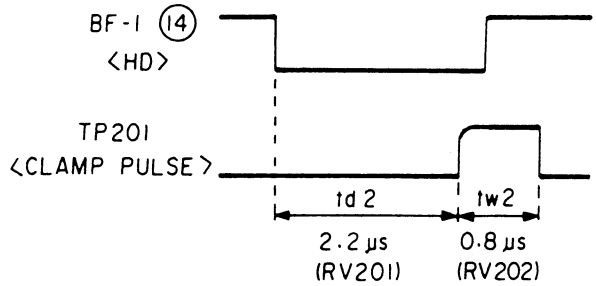
$td_1 + tw_1 <$ BACk-porch period

$tw_1 \geqq 0.8$ μs.

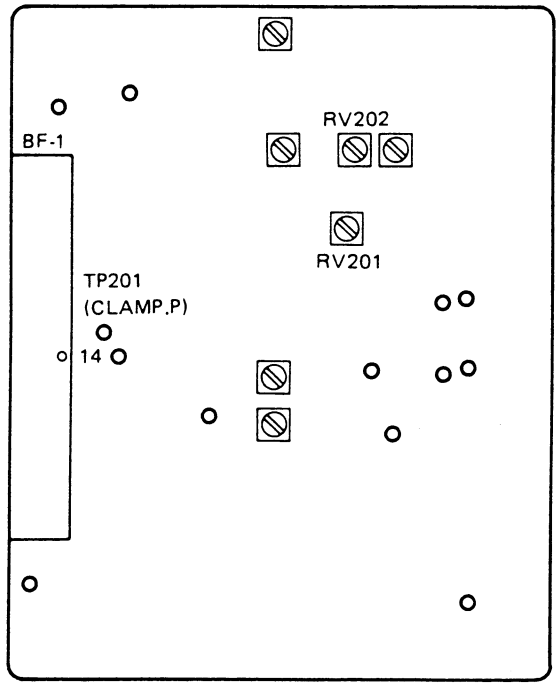
[ADJUSTMENT 2 OF CLAMP PULSE PHASE AND PULSE WIDTH]



1. Input the color bar signal.
2. Monitoring pin ⑭ connector BF-1 and TP201 on the BF board with an oscilloscope, adjust td_2 and tw_2 in the Fig. below with RV201 and RV202. td_2 and tw_2 should be measured the points where amplitude is 50%.



BF board



Note:

As shown in Fig. 1, td_2 and tw_2 are values for the case of $t > 3.3$ μs.

As shown in Fig. 2, when the HD phase is delayed and $t \leqq 3.3$ μs, the clamp pulse enters into the video signal period. When the HD signal like $t \leqq 3.3$ μs is input, adjust to obtain the following.

$td_2 + tw_2 < t$

$tw_2 \geqq 0.8$ μs

Fig. 1

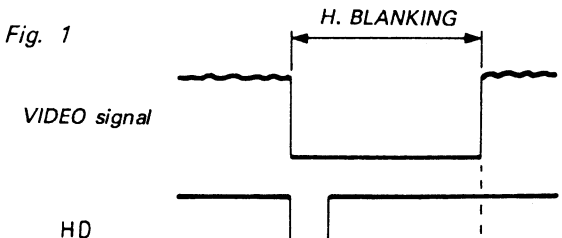
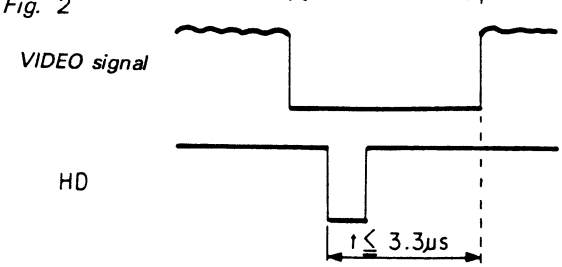
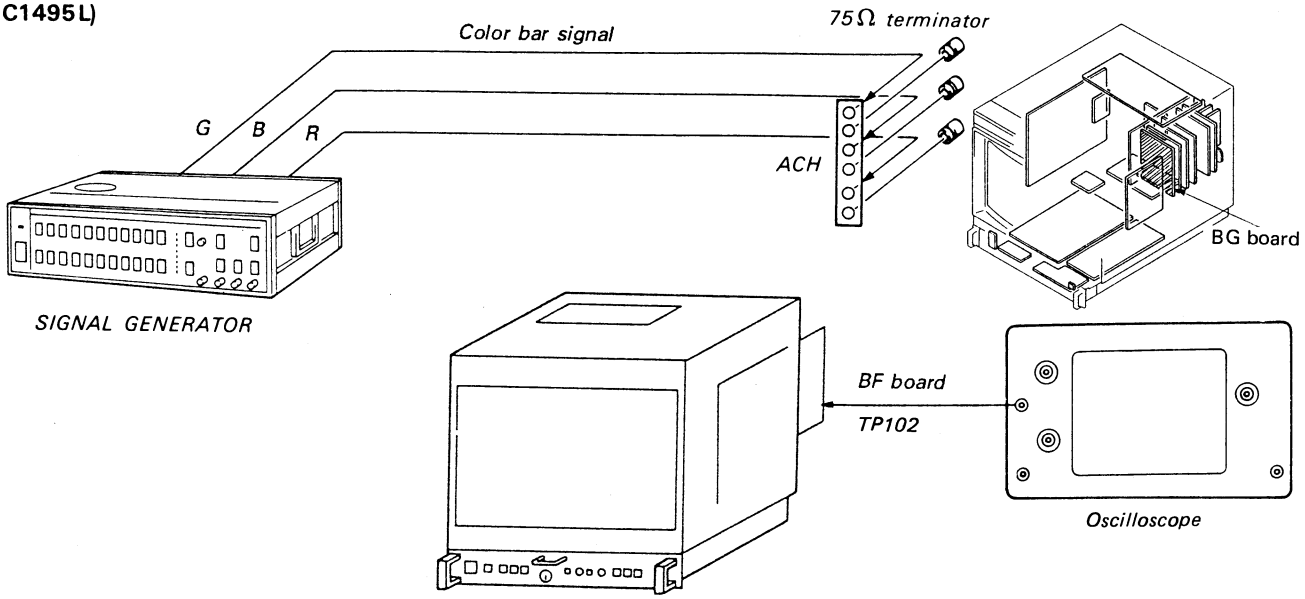


Fig. 2

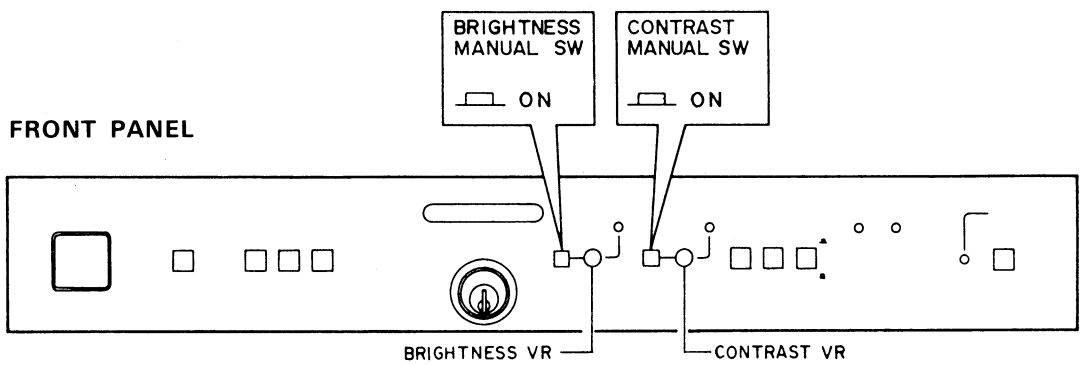


7. BG BOARD ADJUSTMENT

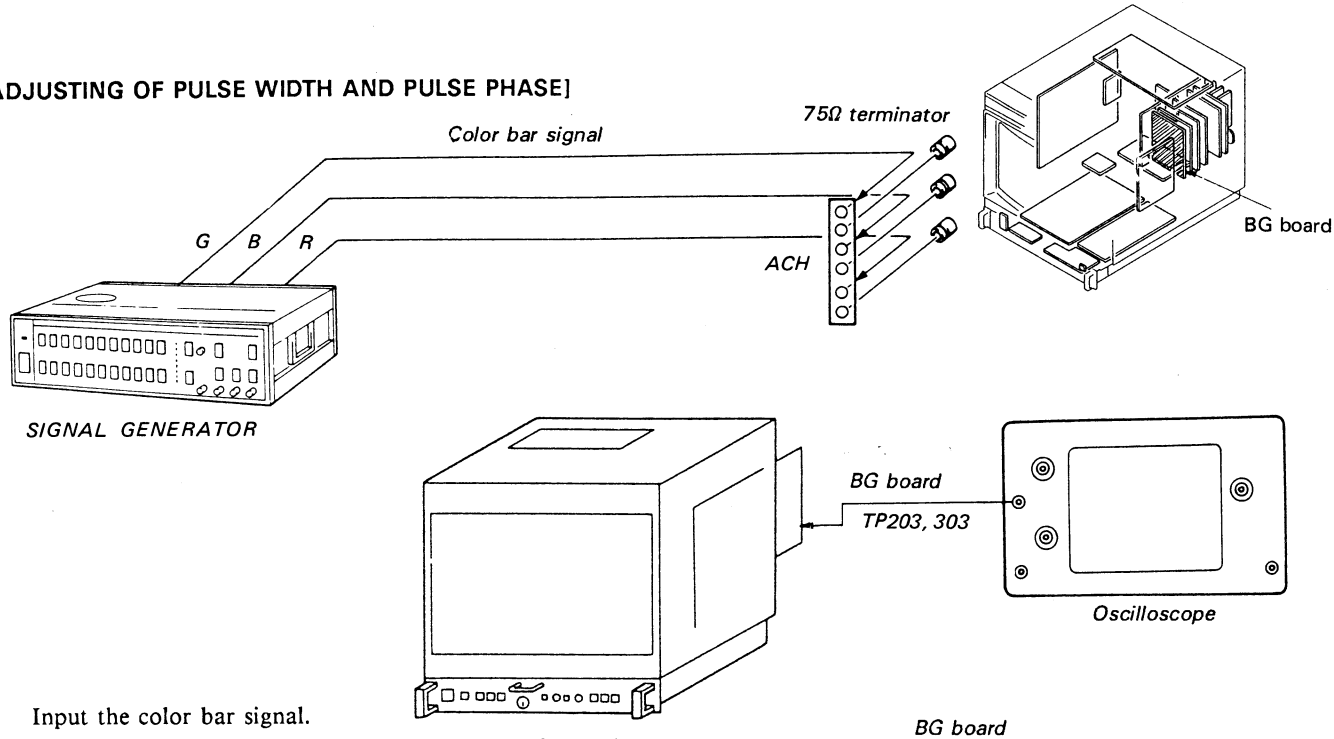
OFFSET ADJUSTMENT OF BG BOARD MULTIPLIER (MC1495L)



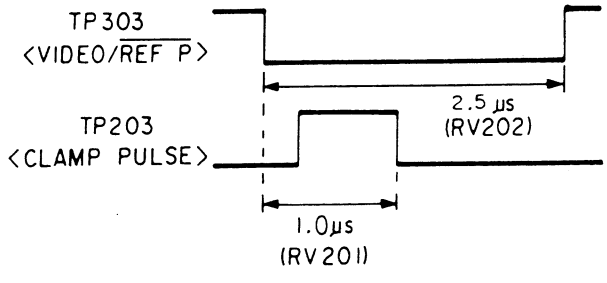
1. Input the dot signal.
2. Set the CONTRAST MANUAL SW to ON.
3. Set the BRIGHTNESS MANUAL SW to ON.
4. Connect TP106 on the BG board to GND.
5. Connect the oscilloscope probe to TP102 on the BG board.
6. Adjust OFFSET-2 (RV102) so that the DC level of TP102 does not change (amount of change within 20 mV) when the CONTRAST MANUAL control of the front panel is turned.
7. Remove TP106 on the BG board from GND and connect TP105 (CONTRAST) to GND.
8. Adjust OFFSET-1 (RV103) so that the DC level of TP102 does not change (amount of change within 20 mV) when the BRIGHTNESS MANUAL control of the front panel is turned.
9. While TP105 is connected to GND, adjust OFFSET-3 (RV101) so that the DC level of TP107 becomes 0V (0V±10 mV).



[ADJUSTING OF PULSE WIDTH AND PULSE PHASE]

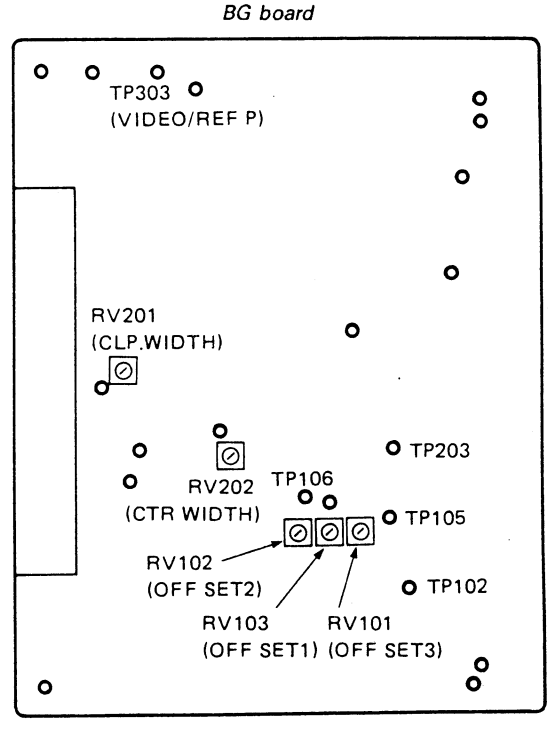


1. Input the color bar signal.
2. As shown in the Fig. below, adjust the phases of TP303 and TP203 with RV201.
3. Adjust the pulse width of TP303 with RV202.



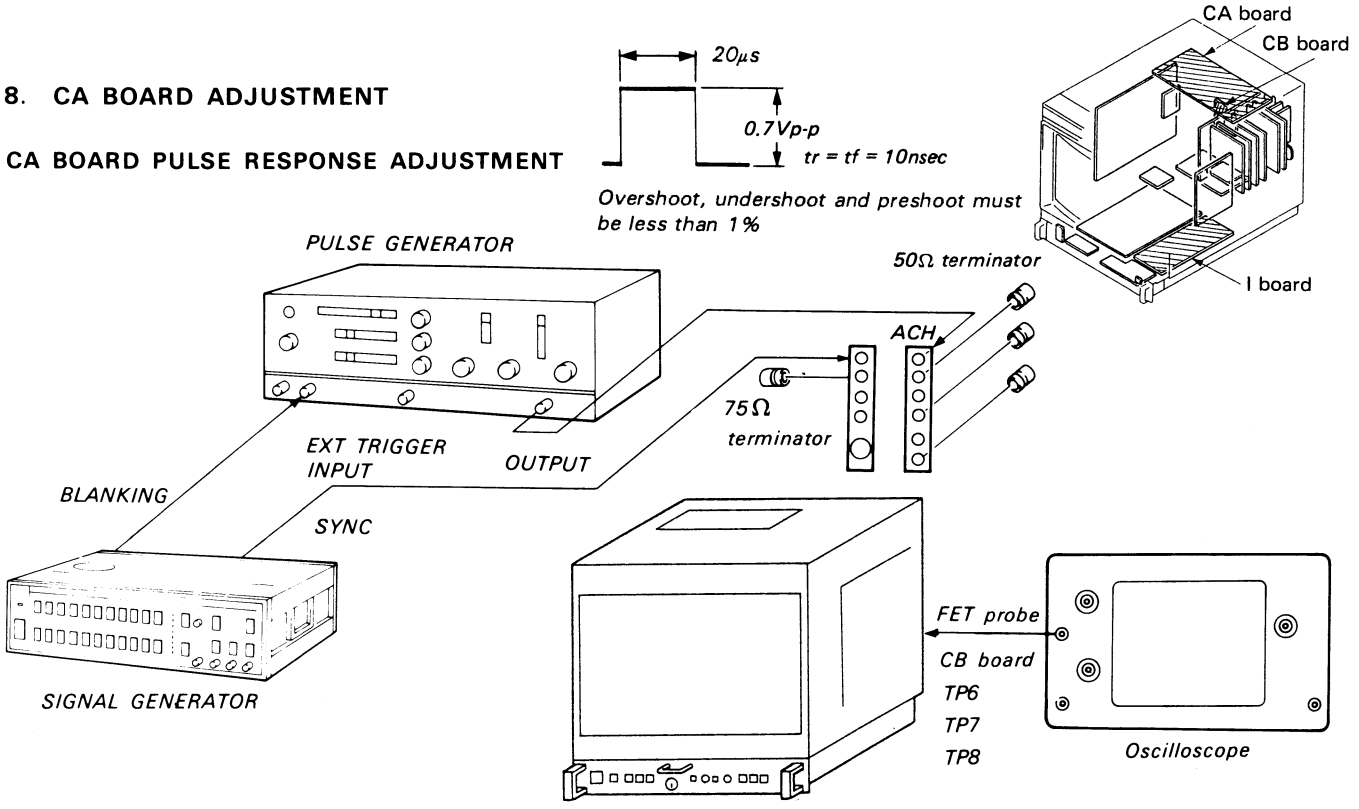
Note:

Measurements should be performed at 50% of the pulse amplitude.

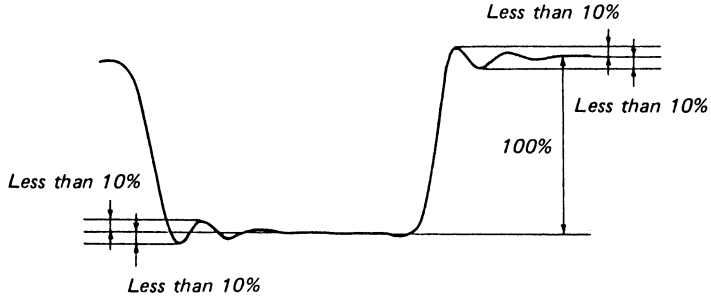


8. CA BOARD ADJUSTMENT

CA BOARD PULSE RESPONSE ADJUSTMENT



1. Pulse response adjustment of KR.(Use a FET probe.)
   1) Set the SYNC SW of the front panel to EXT (⎍).
   2) Input the pulse generator output to R channel.
   3) Adjust the TP6 (KR) amplitude on the CB board to 30 Vp-p by turning the CONTRAST MANUAL control.
   4) Adjust the overshoot undershoot and preshoot within 10% with CV1, 2
2. Adjust KG and KB in the same manner as the above.
   1) Adjust KG with TP7 and CV201, 202.
   2) Adjsut KB with TP8 and CV401, 402.
3. Select GRAY SCALE by SIGNAL SELECT button on) the I board.

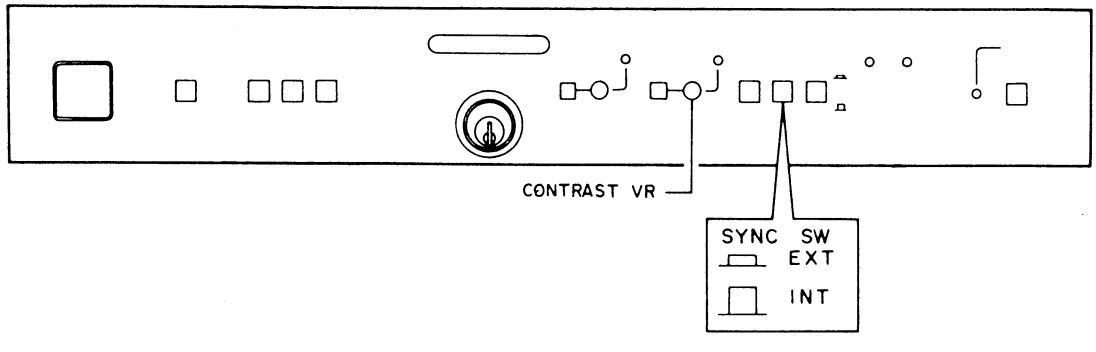


Waveform of TP6, TP7 and TP8

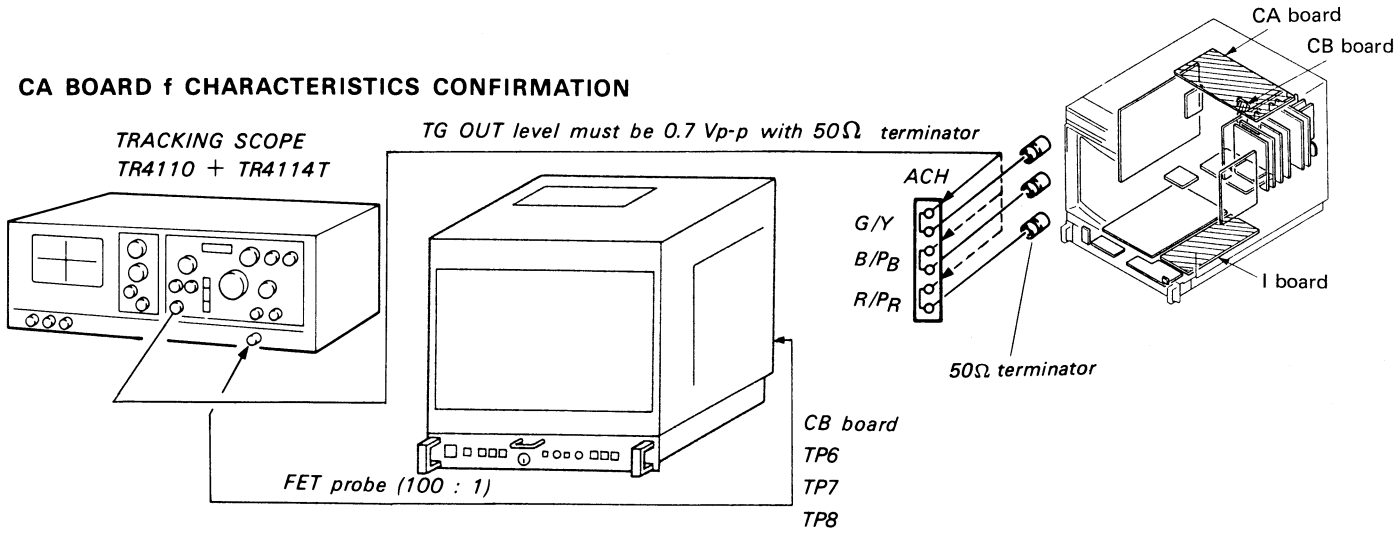
NOTE :

- As to the CA board and CB board, see page 4-50.
- The input signal should be 0.7Vp-p (during 50Ω termination), the pulse width 20μsc rising and lowering times 10 nsec, and overshoot undershoot and preshoot less than 1%

Front panel



CA BOARD f CHARACTERISTICS CONFIRMATION



[f CHARACTERISTICS CONFIRMATION OF KR]

1. Input the tracking scope output to R channel.
2. Adjust the TP6 (KR) amplitude on the CB board to to 50V p-p by turning the CONTRAST MANUAL control.
3. Confirm that the f characteristics is within $\frac{+0.5}{-2}$ dB in a range of 60 Hz to 30 MHz.

[f CHARACTERISTICS CONFIRMATION OF KG]

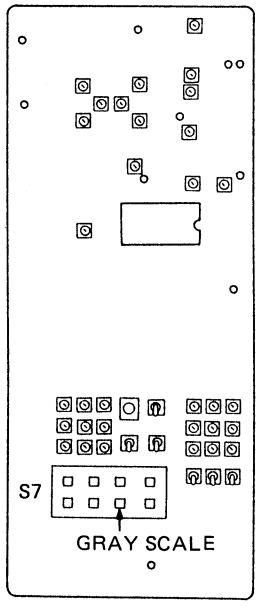
1. Input the tracking scope output to G channel.
2. Adjust the TP7 (KG) amplitude on the CB board to 50 Vp-p by turnign the CONTRAST MANUAL control.
3. Confirm that the f characteristics is within $\frac{+0.5}{-2}$ dB in a range of 60 Hz to 30 MHz.

[f CHARACTERISTICS CONFIRMATION OF KB]

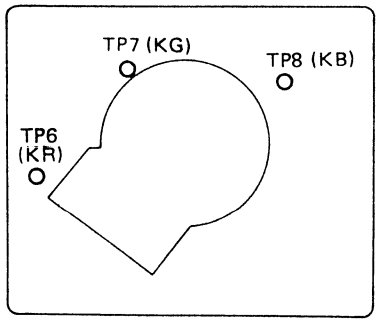
1. Input the tracking scope output to B channel.
2. Adjust the TP8 (KB) amplitude on the CB board to 50 Vp-p by turning the CONTRAST MANUAL control.
3. Confirm that the f characteristics is within $\frac{+0.5}{-2}$ dB in a range of 60 Hz to 30 MHz.
4. Select GRAY SCALE by SIGNAL SELECT button on the I board.

Note: If there are out of specifications, perform the adjustment in page 4-49 again and confirm the frequency characteristics.

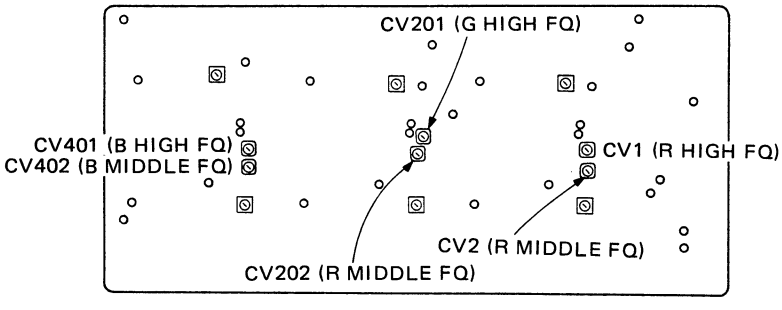
I board



CB board



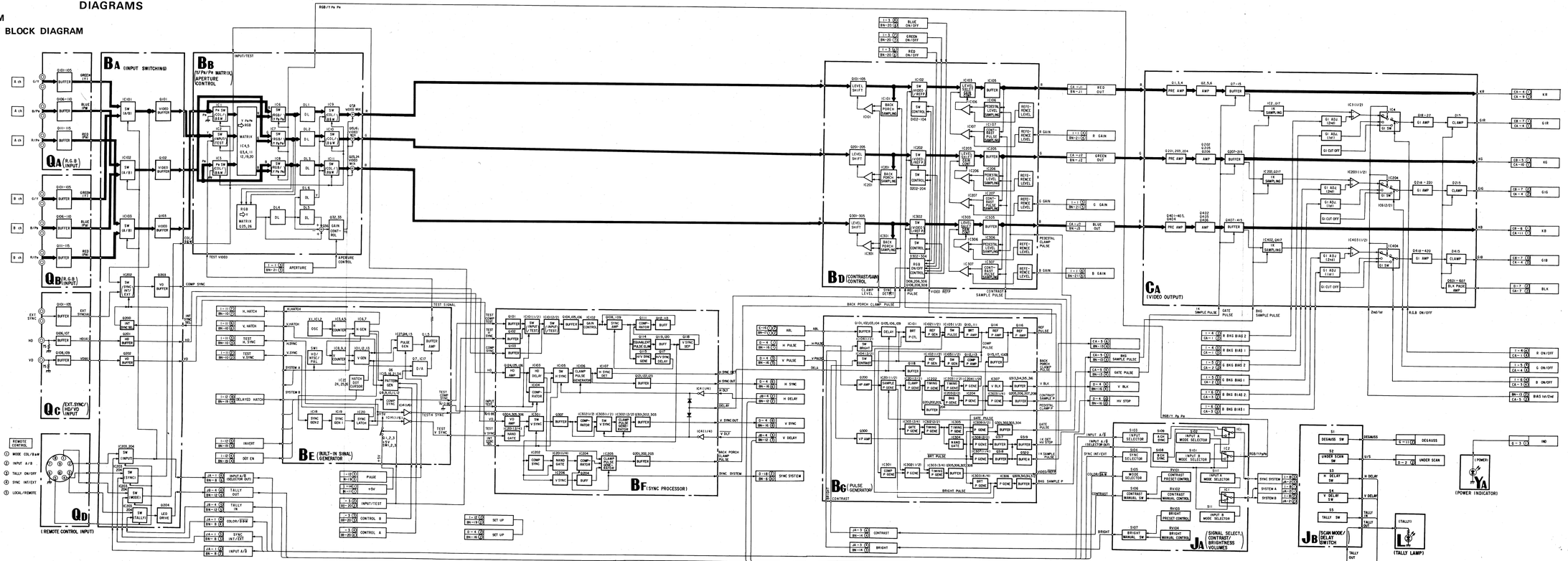
CA board



BLOCK DIAGRAMS BLOCK DIAGRAMS

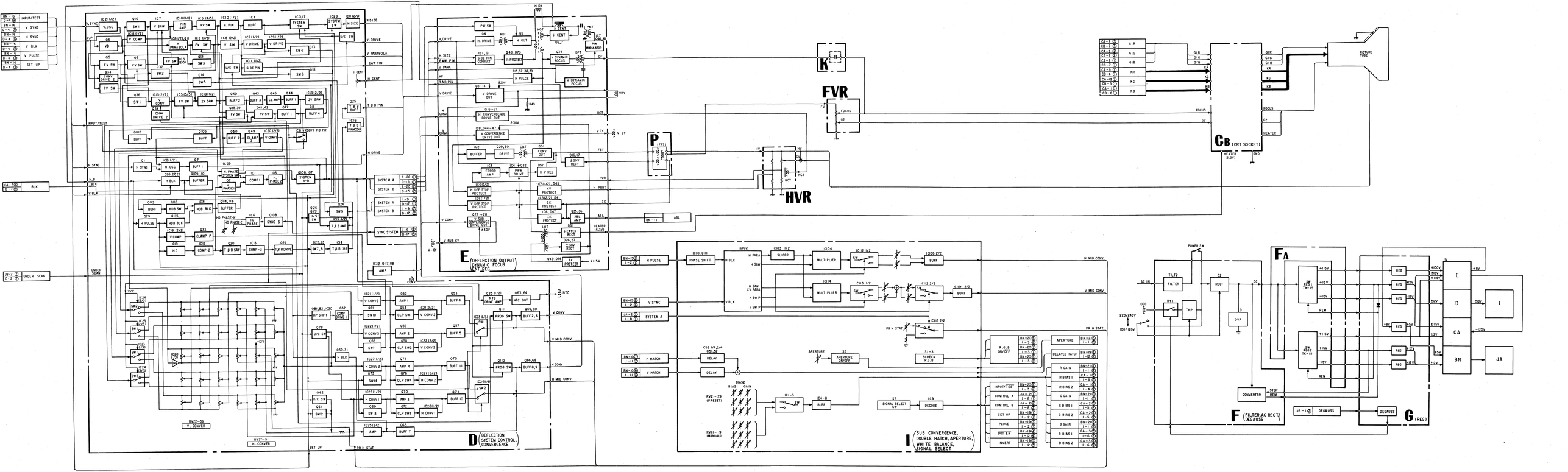
SECTION 5
DIAGRAMS

5-1. BLOCK DIAGRAM
SIGNAL PROCESSING BLOCK DIAGRAM

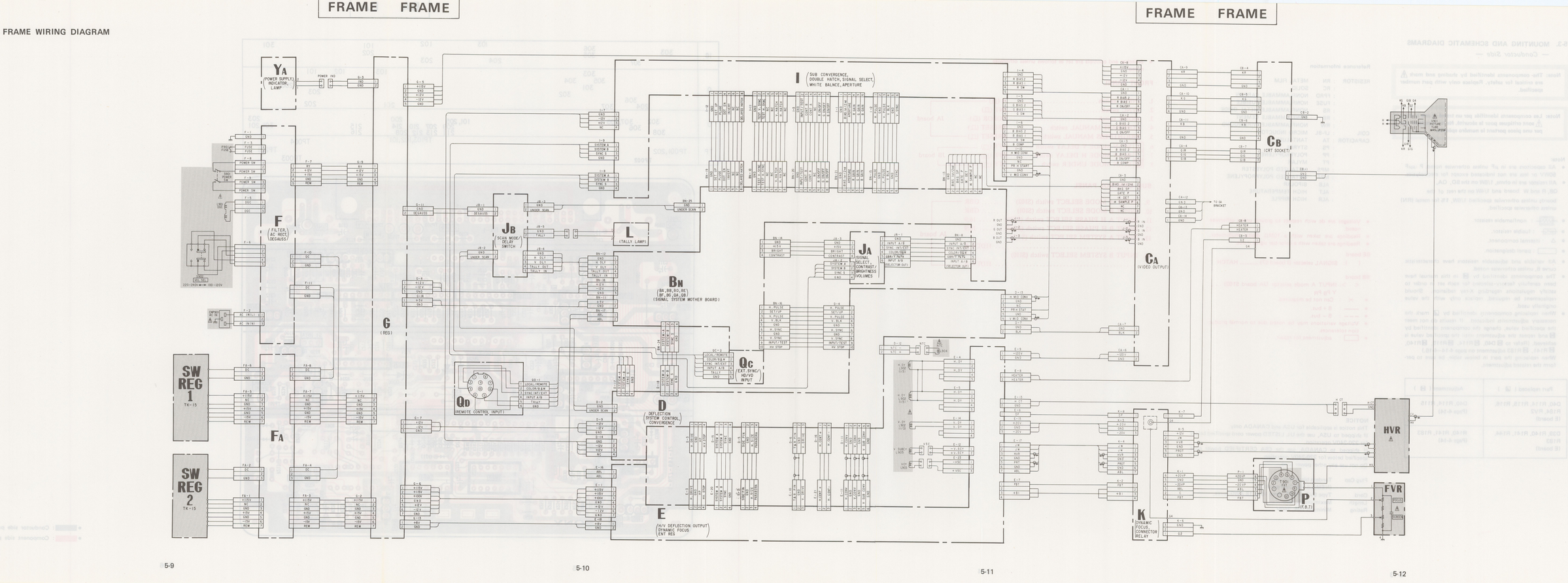


BLOCK DIAGRAMS BLOCK DIAGRAMS

DEFLECTION PROCESSING BLOCK DIAGRAM



5-2. FRAME WIRING DIAGRAM



5-3. MOUNTING AND SCHEMATIC DIAGRAMS

— Conductor Side —

Note: **The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.**

Note: **Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piece portant le numéro spécifié.**

Note:

- All capacitors are in μF unless otherwise noted. P : μμF
  50WV or less are not indicated except for electrolytics.
- All resistor are in ohms, 1/6W on the BD, QA, QB, R and W board and 1/4W on the rest of the boards unless otherwise specified 1/6W, 1% for metal (RN) unless otherwise specified.
- : nonflamable resistor.
- : fusible resistor.
- △ : internal component.
- : panel designation.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- The components identified by ⊞ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
- When replacing components identified by ◪ mark the necessary adjustments indicated. If results do not meet the specified value, change the component identified by ⊞ and repeat the adjustment until the specified value is achieved. (Refer to ⊞ D40, ⊞ R114, ⊞ R115, ⊞ R140, ⊞ R141, ⊞ R183 adjustment on page 4-14—4-16.)
  When replacing the part in below table, be sure to perform the related adjustment.

Part replaced (◪)	Adjustment (⊞)
D40, R114, R115, R116, R184, RV2 (E board)	D40, R114, R115 (Page 4-14)
D39, R140, R141, R144, R183 (E board)	R140, R141, R183 (Page 4-14)

Reference information

RESISTOR	: RN	METAL FILM
	: RC	SOLID
	: FPRD	NONFLAMMABLE CARBON
	: FUSE	NONFLAMMABLE FUSIBLE
	: RS	NONFLAMMABLE METAL OXIDE
	: RB	NONFLAMMABLE CEMENT
	: RW	NONFLAMMABLE WIREWOUND
COIL	: LF-BL	MICRO INDUCTOR
CAPACITOR	: TA	TANTALUM
	: PS	STYROL
	: PP	POLYPROPYLENE
	: PT	MYLAR
	: MPS	METALIZED POLYESTER
	: MPP	METALIZED POLYPROPYLENE
	: ALB	BIPOLAR
	: ALT	HIGH TEMPERATURE
	: ALR	HIGH RIPPLE

- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a 10MΩ digital multimeter.
- Readings are taken with a color-bar signal input.

BE board

( ): SIGNAL selector (I board S7) ..... HATCH

BB board

< >: INPUT A mode selector (JA board S102) . . . .
Y PB PR

- ✕ : Can not be measured.
- ——— : B + bus.
- – – – : B – bus.
- Voltage variations may be noted due to normal production tolerances.
- : adjustment for repair.

NOTICE

This notice is applicable for USA and CANADA only.
If shipped to USA, use the UL LISTED power cord specified below for 220-240V operation.
If shipped to CANADA, use the CSA CERTIFIED power cord specified below for 220-240V operation.
Do not use any other power cord.

Plug Cap	Tandem blade with ground pin. (NEMA 6-15P Configuration)
Cord	Type SVT or SJT, three 16 or 18 AWG wires.
Length	Maximum 15, feet
Rating	Minimum 10A, 250V

- Switches and controls are set as follows unless otherwise noted

FRONT PANEL

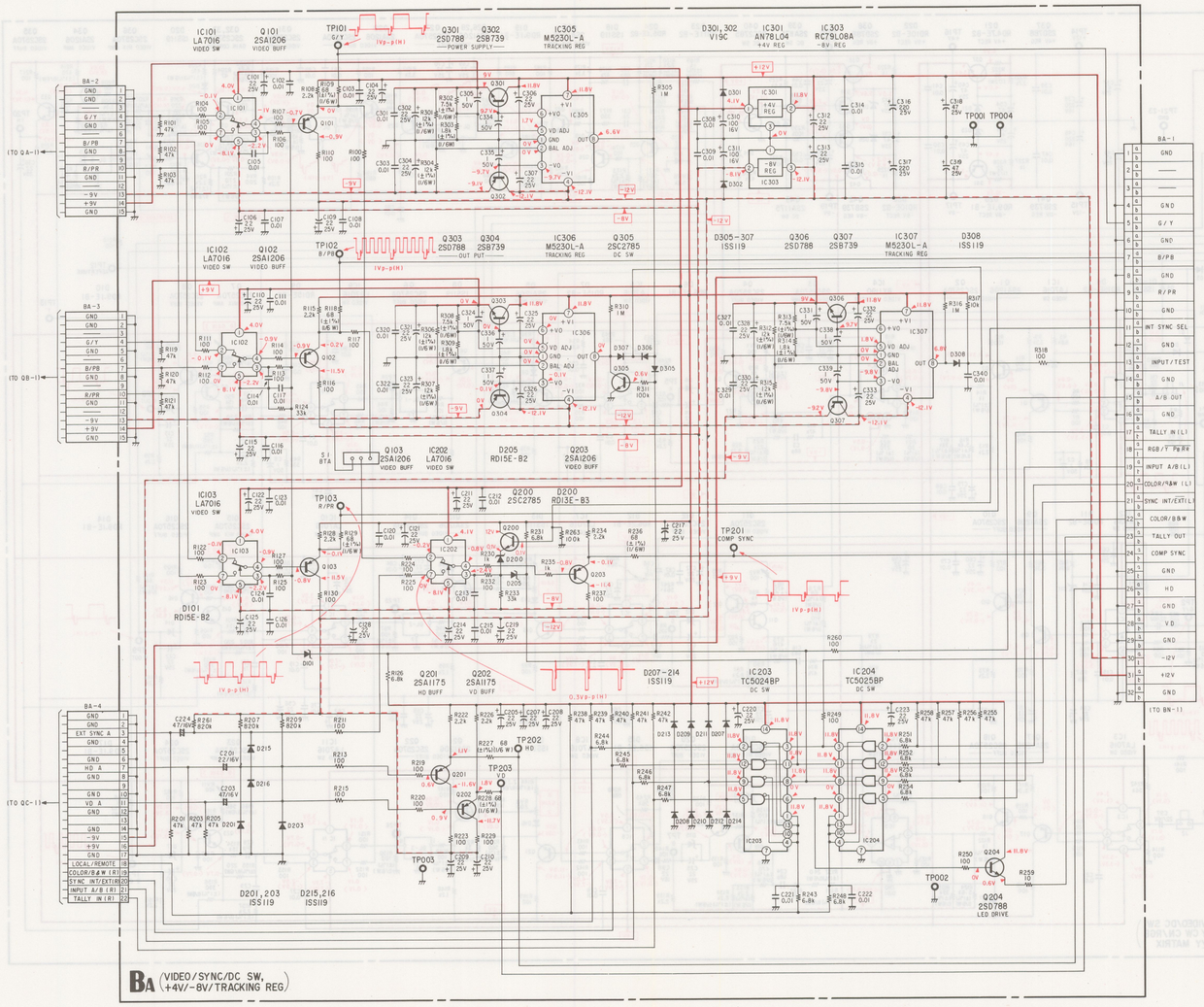
1. INPUT switch ..... A (□)
2. SYNC switch ..... INT (□)
3. MODE switch ..... COLOR (□) — JA board
4. CONTRAST MANUAL switch ..... PRESET (□)
5. BRIGHTNESS MANUAL switch ..... PRESET (□)
6. ⊟ SCAN MODE V DELAY switch ..... OFF (□)
7. ⊞ SCAN MODE H DELAY switch ..... OFF (□) — JB board
8. ⊡ SCAN MODE UNDER switch ..... OFF (□)

SUB CONTROL PANEL

9. INPUT A MODE SELECT switch (S102) ..... GBR
10. INPUT B MODE SELECT switch (S101) ..... GBR
11. INPUT A H PHASE SELECT switch (S109) 16:9
12. INPUT B H PHASE SELECT switch (S108) 16:9
13. INPUT A SYSTEM SELECT switch (S113) ..... HDTV A — JA board
14. INPUT B SYSTEM SELECT switch (S110) ..... HDTV A

| | | |

BA board (INPUT SWITCHING)



BA board

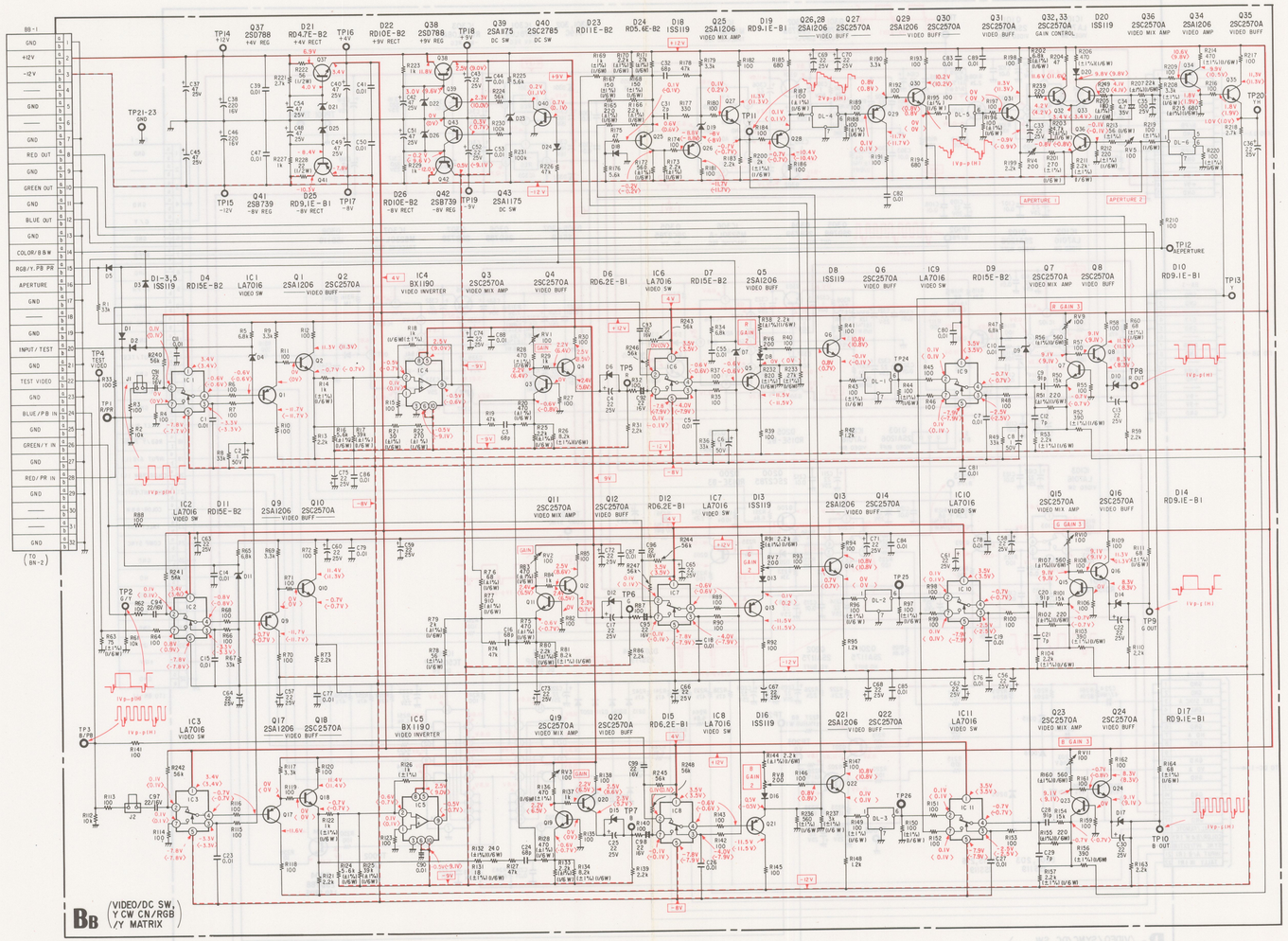
IC101	LA7016	VIDEO SW
102	LA7016	VIDEO SW
103	LA7016	VIDEO SW
202	LA7016	VIDEO SW
203	TC5024BP	DC SW
204	TC5025BP	DC SW
301	AN78L04	+4V REG
303	RC79L08A	-8V REG
305	M5230L-A	TRACKING REG
306	M5230L-A	TRACKING REG
307	M5230L-A	TRACKING REG
Q101	2SA1206	VIDEO BUFF
102	2SA1206	VIDEO BUFF
103	2SA1206	VIDEO BUFF
Q200	2SC2785	
201	2SA1175	HD BUFF
202	2SA1175	VD BUFF
203	2SA1206	VIDEO BUFF
204	2SD788	LED DRIVE
301	2SD788	POWER SUPPLY
302	2SB739	POWER SUPPLY
303	2SD788	OUTPUT
304	2SB739	OUTPUT
305	2SC2785	DC SW
306	2SD788	
307	2SB739	
D101	RD15EB2	
D200	RD13EB3	
201	1SS119	
203	1SS119	
205	RD15EB2	
207	1SS119	
208	1SS119	
209	1SS119	
210	1SS119	
211	1SS119	
212	1SS119	
213	1SS119	
214	1SS119	
215	1SS119	
216	1SS119	
301	V19C	
302	V19C	
305	1SS119	
306	1SS119	
307	1SS119	
308	1SS119	

BB board

IC1	LA7016	VIDEO SW
2	LA7016	VIDEO SW
3	LA7016	VIDEO SW
4	BX-1190	VIDEO INVERTER
5	BX-1190	VIDEO INVERTER
6	LA7016	VIDEO SW
7	LA7016	VIDEO SW
8	LA7016	VIDEO SW
9	LA7016	VIDEO SW
10	LA7016	VIDEO SW
11	LA7016	VIDEO SW
Q1	2SA1206	VIDEO BUFF
2	2SC2570A	VIDEO BUFF
3	2SC2570A	VIDEO MIX AMP
4	2SC2570A	VIDEO BUFF
5	2SA1206	VIDEO BUFF
6	2SC2570A	VIDEO BUFF
7	2SC2570A	VIDEO MIX AMP
8	2SC2570A	VIDEO BUFF
9	2SA1206	VIDEO BUFF
10	2SC2570A	VIDEO BUFF
11	2SC2570A	VIDEO MIX AMP
12	2SC2570A	VIDEO BUFF
13	2SA1206	VIDEO BUFF
14	2SC2570A	VIDEO BUFF
15	2SC2570A	VIDEO MIX AMP
16	2SC2570A	VIDEO BUFF
17	2SA1206	VIDEO BUFF
18	2SC2570A	VIDEO BUFF
19	2SC2570A	VIDEO MIX AMP
20	2SC2570A	VIDEO BUFF
21	2SA1206	VIDEO BUFF
22	2SC2570A	VIDEO BUFF
23	2SC2570A	VIDEO MIX AMP
24	2SC2570A	VIDEO BUFF
25	2SA1206	VIDEO MIX AMP
26	2SA1206	VIDEO BUFF
27	2SC2570A	VIDEO BUFF
28	2SA1206	VIDEO BUFF
29	2SA1206	VIDEO BUFF

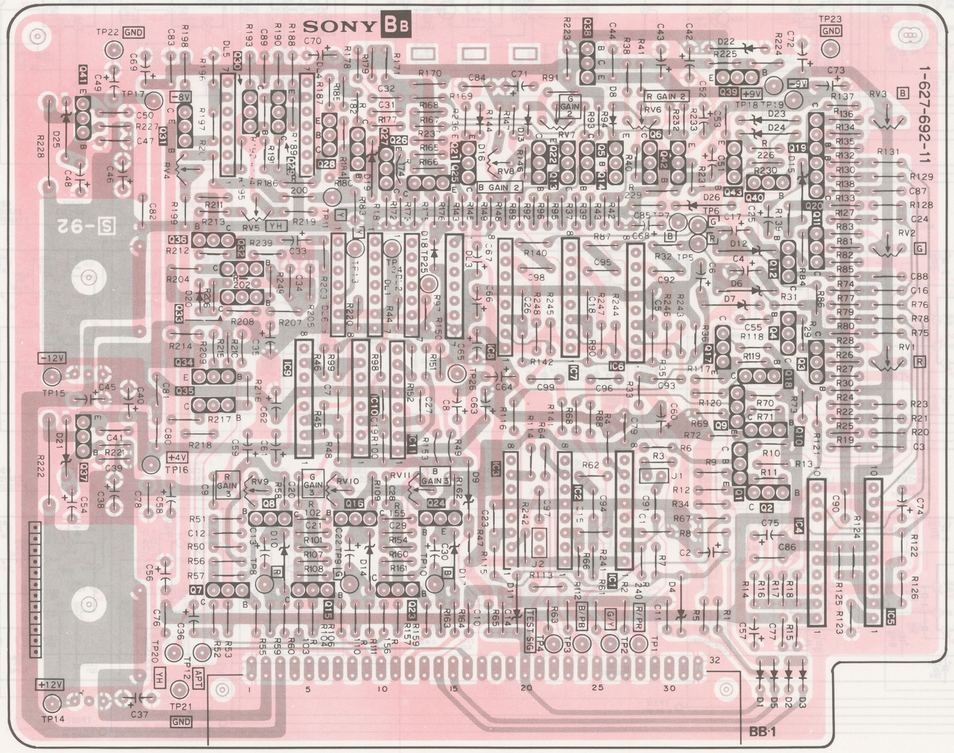
Q30	2SC2570A	VIDEO BUFF
31	2SC2570A	VIDEO BUFF
32	2SC2570A	GAIN CONTROL
33	2SC2570A	GAIN CONTROL
34	2SA1206	VIDEO AMP
35	2SC2570A	VIDEO BUFF
36	2SC2570A	VIDEO MIX AMP
37	2SD788	+4V REG
38	2SD788	+9V REG
39	2SA1175	DC SW
40	2SC2785	DC SW
41	2SB739	-8V REG
42	2SB739	-9V REG
43	2SA1175	DC SW
D1	1SS119	
2	1SS119	
3	1SS119	
4	RD15EB2	
5	1SS119	
6	RD6.2EB1	
7	RD15EB2	
8	1SS119	
9	RD15EB2	
10	RD9.1EB1	
11	RD15EB2	
12	RD6.2EB1	
13	1SS119	
14	RD9.1EB1	
15	RD6.2EB1	
16	1SS119	
17	RD9.1EB1	
18	1SS119	
19	RD9.1EB1	
20	1SS119	
21	RD4.7EB2	+4V REG
22	RD10EB2	+9V REG
23	RD11EB2	
24	RD5.6EB2	
25	RD9.1EB1	-8V REG
26	RD10EB2	-8V REG

BB board (YPBPR MATRIX, APERTURE CONTROL)



BB board (YPBPR MATRIX, APERTURE CONTROL)

IC	8 7 6 9 10 11 3 2 1 4 5
Q	41 38 39 19 31 30 29 28 27 26 25 21 22,13,5 14 6 42 43 40 20 36 32 12 11 34 33 17 18 4 3 37 35 9 10 7 8 15 16 23 24 1 2
D	19 16 13 8 22,23 25 20 26 24 15 21 18 6 12 10 14 17 9 11 4 7 1 5 2 3
ADJ	TPI7 TPI8 TP23 RV3
TP	TP22 TPI6 RV4 RV5 TPI1,TPI3 TP24 TP25 TP6 TP7 TP19 RV2 TPI5 TP20 TPI2 TP8 TP9 TPI0 TP5 RV1 TPI4 TP2I TP26 TP4,TP3,TP2,TP1

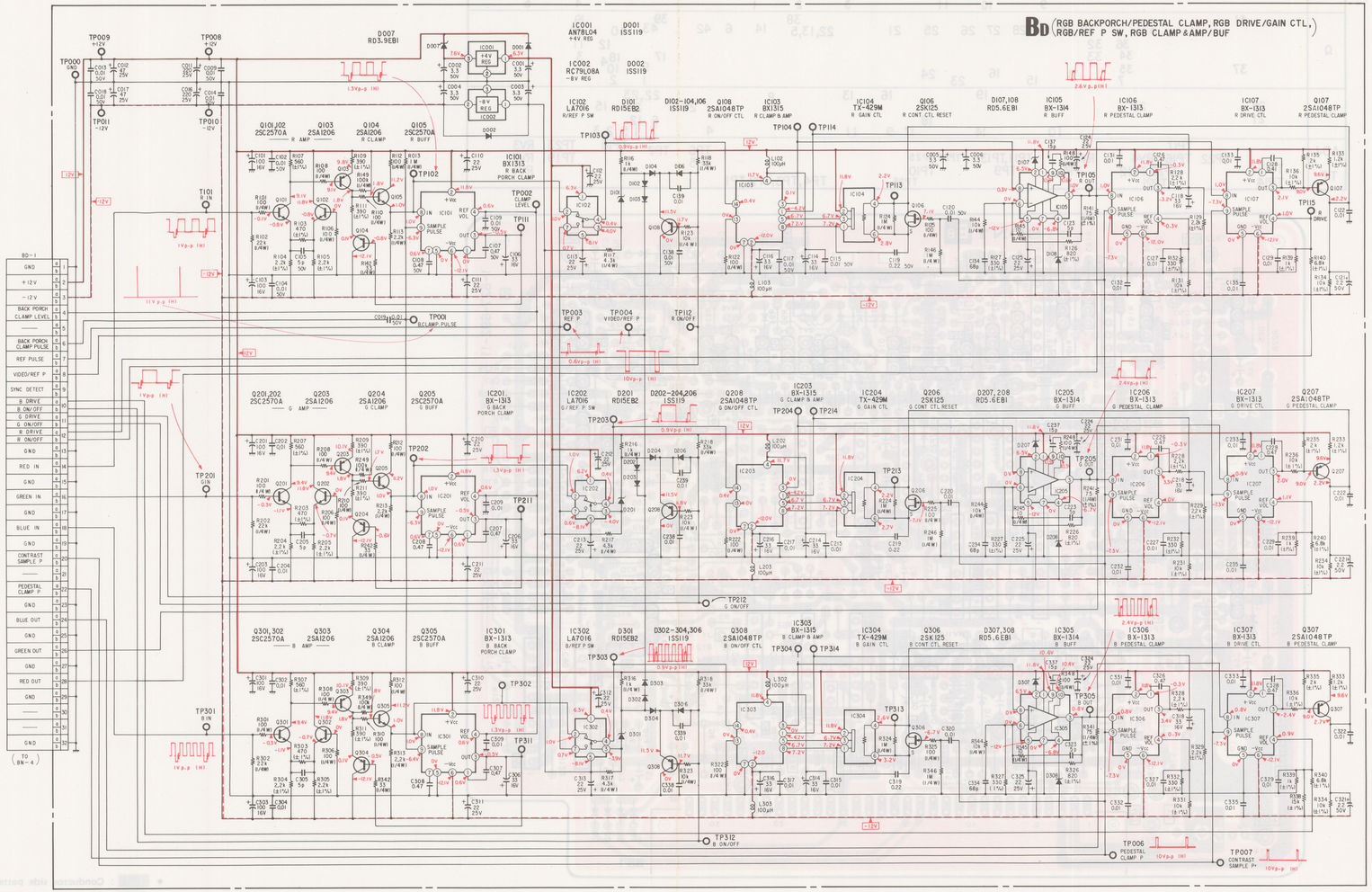


● : Conductor side pattern
● : Component side pattern

BD board

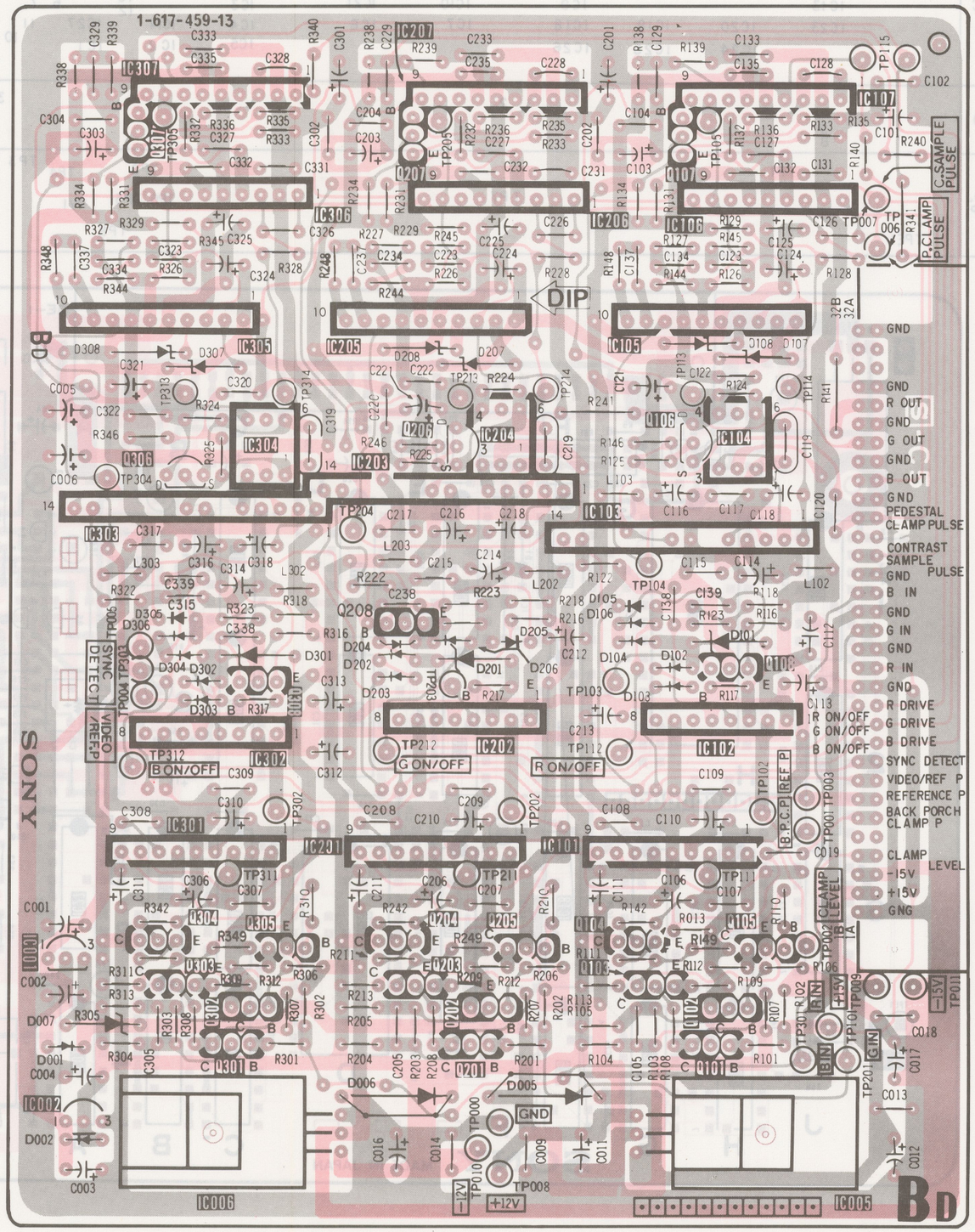
IC001	AN78L04	+4V REG
002	RC79L08A	-8V REG
101	BX-1313	R BACKPORCH CLAMP
102	LA7016	R/REF P SW
103	BX-1315	R CLAMP & AMP
104	TX-429M	R GAIN CTL
105	BX-1314	R BUFF
106	BX-1313	R PEDESTAL CLAMP
107	BX-1313	R DRIVE CTL
201	BX-1313	G BACKPORCH CLAMP
202	LA7016	G/REF P SW
203	BX-1315	G CLAMP & AMP
204	TX-429M	G GAIN CTL
205	BX-1314	G BUFF
206	BX-1313	G PEDESTAL CLAMP
207	BX-1313	G DRIVE CTL
301	BX-1313	B BACKPORCH CLAMP
302	LA7016	B/REF P SW
303	BX-1315	B CLAMP & AMP
304	TX-429M	B GAIN CTL
305	BX-1314	B BUFF
306	BX-1313	B PEDESTAL CLAMP
307	BX-1313	B DRIVE CTL
Q101	2SC2570A	R AMP
102	2SC2570A	R AMP
103	2SA1206	R AMP
104	2SA1206	R CLAMP
105	2SC2570A	R BUFF
106	2SK125	R CONT CTL RESET
107	2SA1048	R PEDESTAL CLAMP
108	2SA1048	R ON/OFF CTL
201	2SC2570A	G AMP
202	2SC2570A	G AMP
203	2SA1206	G AMP
204	2SA1206	G CLAMP
205	2SC2570A	G CLAMP
206	2SK125	G CONT CTL RESET
Q207	2SA1048	G PEDESTAL CLAMP
208	2SA1048	G ON/OFF CTL
301	2SC2570A	B AMP
302	2SC2570A	B AMP
303	2SA1206	B AMP
304	2SA1206	B CLAMP
305	2SC2570A	B CLAMP
306	2SK125	B CONT CTL RESET
307	2SA1048	B PEDESTAL CLAMP
308	2SA1048	B ON/OF CTL
D001	1SS119	
002	1SS119	
007	RD5.9EB1	
101	RD15EB2	
102	1SS119	
103	1SS119	
104	1SS119	
106	1SS119	
107	RD5.6EB1	
108	RD5.6EB1	
201	RD15EB2	
202	1SS119	
203	1SS119	
204	1SS119	
206	1SS119	
207	RD5.6EB1	
208	RD5.6EB1	
301	RD15EB2	
302	1SS119	
303	1SS119	
304	1SS119	
306	1SS119	
307	RD5.6EB1	
308	RD5.6EB1	

BD board (CONTRAST/GAIN CONTROL)



BD board (CONTRAST/GAIN CONTROL)

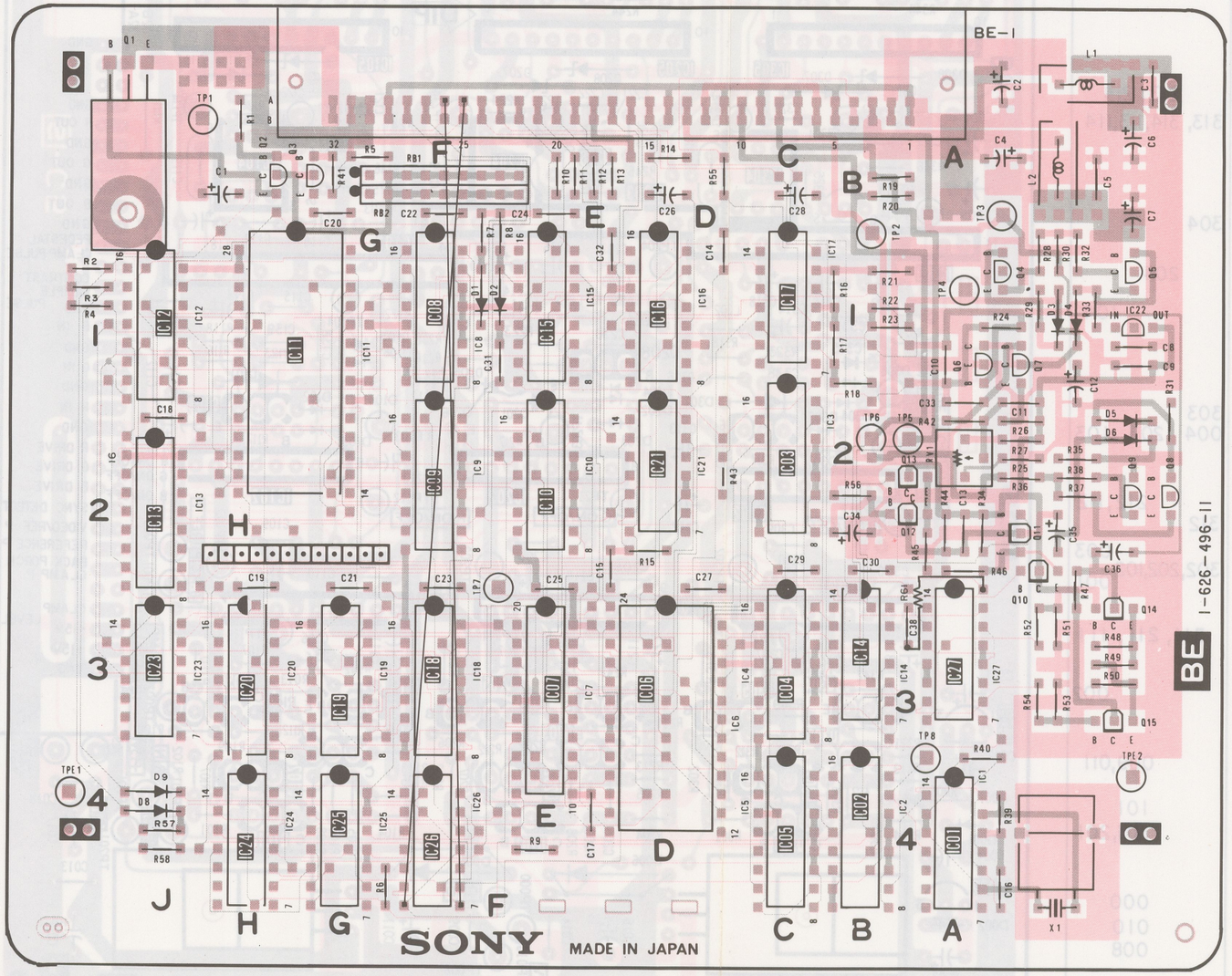
IC	Q	D	TP
			115
307 207 107			305 205 105
	307 207 107		
306 206 106			007
			006
305 205 105			
		308 208 108	213, 214
		307 207 107	313, 314,113,114
304 204 104	206, 106		
203	306		304
303			
103			204
			104
	208	204,106	
		306,202,104 101	
		304, 301, 201	
	308 108	302 102	303
		303,203 103	004 203 103
		206	
202 102			
302			212,112
			312
			003
			302,202,102 001
301 201 101			
			311, 211, 111
	204,205		
	304,305,104,105		002
001			
	303 203 103		
			009,011
	302, 202,102	007	
	301, 201,101	001	101
			301,201
002			
		002	000
			010
			008



• : Conductor side pattern
• : Component side pattern

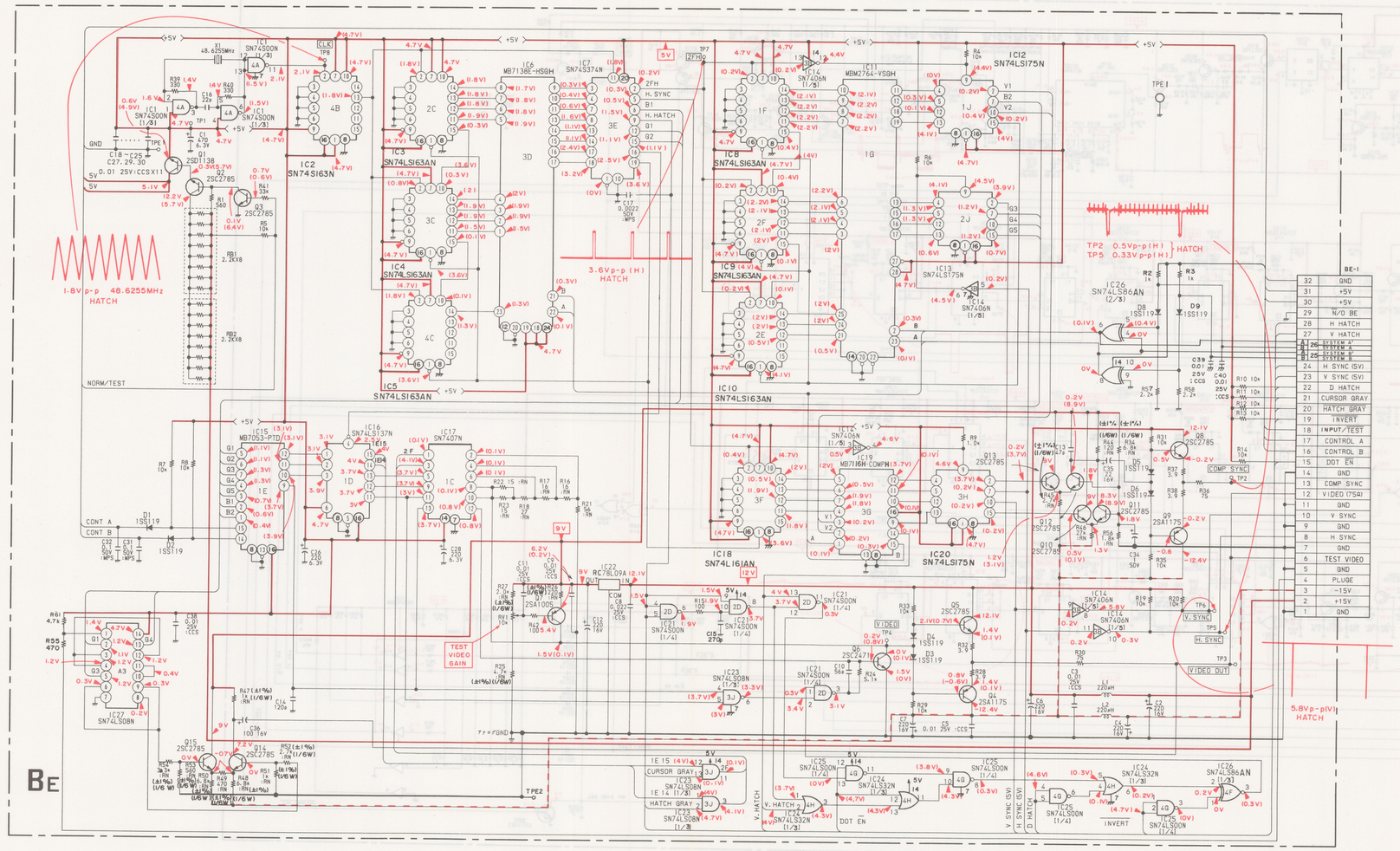
BE board (BUILT-IN SIGNAL GENERATOR)

IC Q	1 IC12 IC13 IC23 2 3 IC11 IC20 IC24 IC19 IC25 IC8 IC9 IC18 IC26 IC15 IC10 IC7 IC16 IC21 IC6 IC17 IC3 IC4 IC5 4 13 12 IC14 IC2 6 7 IC27 IC1 11 10 5 IC22 9 8 14 15
D	1 2 9 8 3 4 5 6
ADJ TP	TP1 TPE1 TP7 TP2 TP4 TP3 TP6 TP5 RV1 TP8 TPE2



• : Conductor side pattern
• : Component side pattern

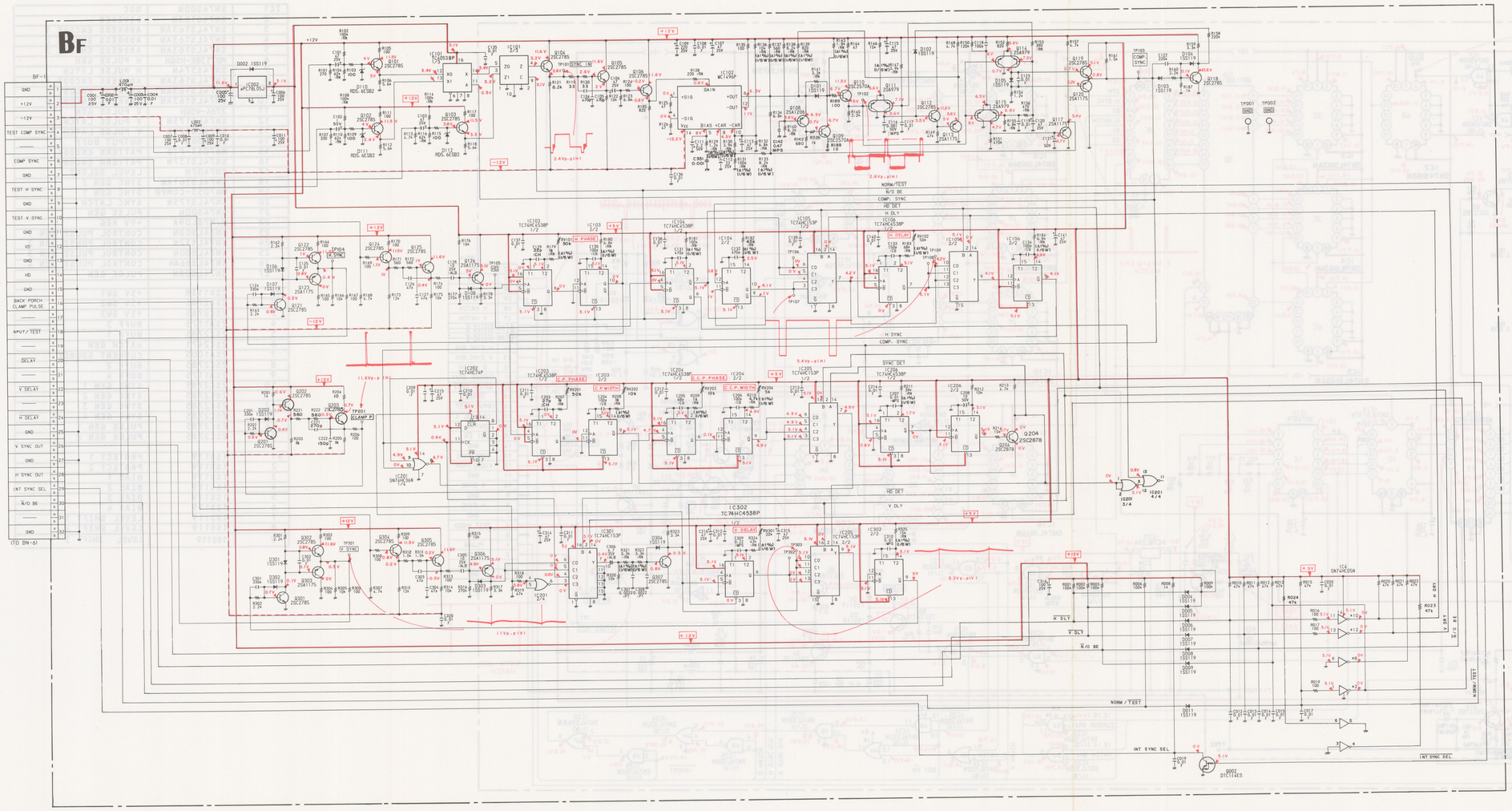
BE board (BUILT-IN SIGNAL GENERATOR)



BE board

IC1	SN74S00N	OSC
2	SN74S163N	DIVIDER
3	SN74LS163AN	ADDRESS ENCODE 1
4	SN74LS163AN	ADDRESS ENCODE 2
5	SN74LS163AN	ADDRESS ENCODE 3
6	MB7138E-HSGH	H PULSE GEN
7	SN74S374N	H PULSE LATCH
8	SN74LS163AN	ADDRESS ENCODE 4
9	SN74LS163AN	ADDRESS ENCODE 5
10	SN74LS163AN	ADDRESS ENCODE 6
11	2764-VSGH	V PULSE GEN
12	SN74LS175N	V PULSE LATCH 1
13	SN74LS175N	V PULSE LATCH 2
14	SN7406N	OUTPUT BUFF
15	MB7053-PTD	PATTERN ENCODE
16	SN74LS137N	PATTERN ENCODE
17	SN7407N	LEVEL SELECT
18	SN74LS161AN	SYNC GEN 2
19	MB7053-COMPB	SYNC GEN 1
20	SN74LS175N	SYNC LATCH
21	SN74S00N	PULSE GEN
22	NJM78L09A	+9V REG
23	SN74LS08N	CONTROL PULSE GEN 1
24	SN74LS32N	CONTROL PULSE GEN 2
25	SN74LS00N	CONTROL PULSE GEN 3
26	SN74LS86AN	CONTROL PULSE GEN 4
27	SN74LS08N	PULGE GEN
Q1	2SD1138	+5V SW1
2	2SC2785	+5V SW2
3	2SC2785	+5V SW3
4	2SA1175	BUFF 3
5	2SC2785	BUFF 1
6	2SC2471	HATCH GEN
7	2SA1005	CURRENT SOURCE
8	2SC2785	BUFF 2
9	2SA1175	BUFF 4
10	2SC2785	SYNC GEN 1
11	2SC2785	SYNC GEN 2
12	2SC2785	SYNC GEN 3
13	2SC2785	SYNC GEN 4
14	2SC2785	PULGE GEN 1
15	2SC2785	PULGE GEN 2
D1	1SS119	PROTECT 1
2	1SS119	PROTECT 2
3	1SS119	BIAS 1
4	1SS119	BIAS 2
5	1SS119	BIAS 3
6	1SS119	BIAS 4
7	1SS119	LEVEL SHIFT 1
8	1SS119	LEVEL SHIFT 2
9	1SS119	LEVEL SHIFT 3

BF board (SYNC PROCESSOR)

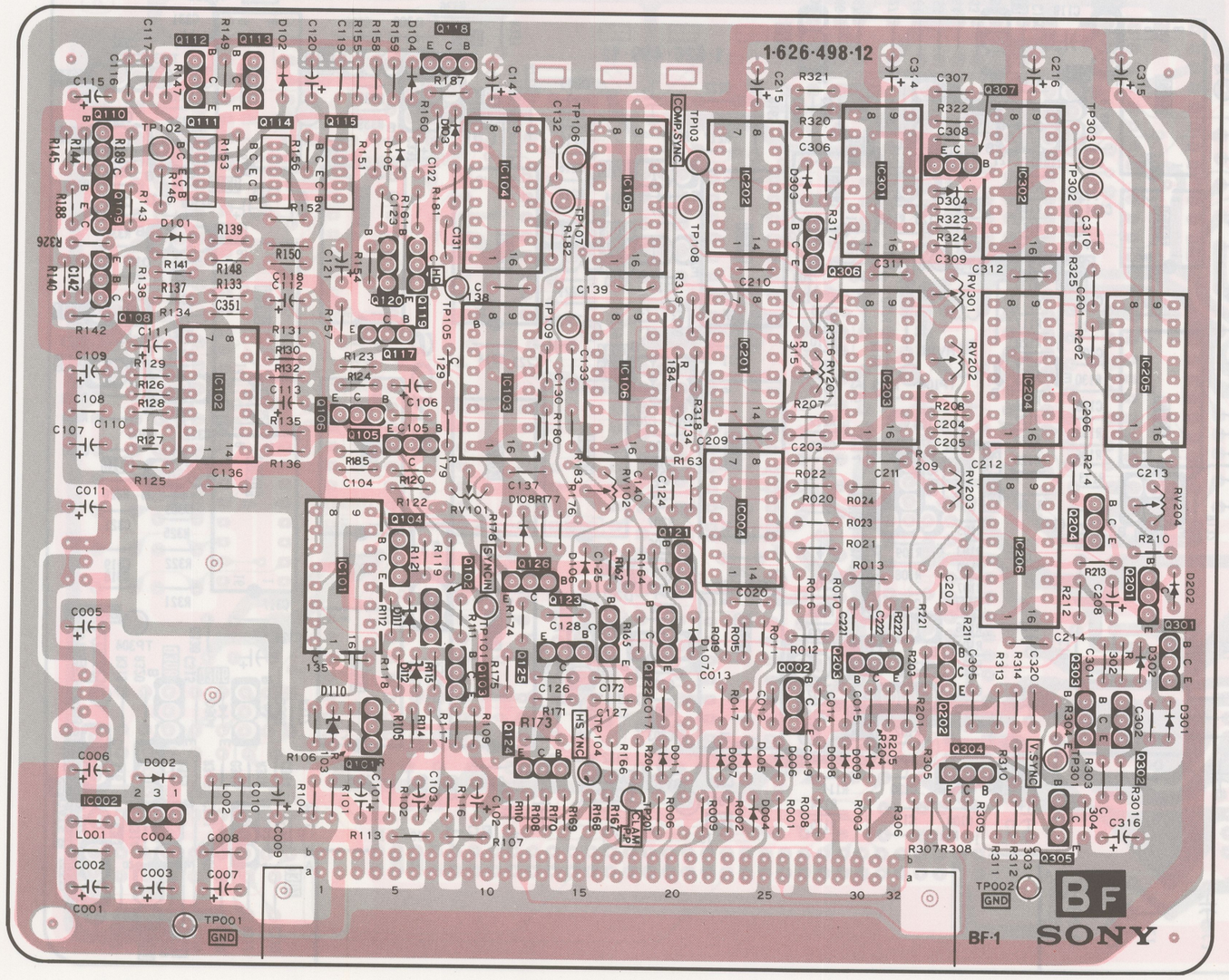


BF board

IC2	UPC78L05J	5V REG
4	SN74HC05N	INVERTER
101	TC4053BP	INPUT/TEST SW
102	MC1496P	GAIN CONTROL
103	TC74HC4538P	HD DELAY
104	TC74HC4538P	COMPARATOR
105	TC74HC153P	H SYNC SW
106	TC74HC4538P	CLAMP PULSE GEN
201	SN74HC36N	NAND GATE
202	MC74HC74N	COMP SYNC
203	TC74HC4538P	HD DELAY
204	TC74HC4538P	COMPARATOR
205	TC74HC153P	CLAMP PULSE GEN
206	TC74HC4538P	V SYNC
301	TC74HC153P	V SYNC SW
302	TC74HC4538P	CLAMP PULSE GEN & COMPARATOR
Q2	DTC114ES	INVERTER
101	2SC2785	BUFF
102	2SC2785	BUFF
103	2SC2785	BUFF
104	2SC2785	BUFF
105	2SC2785	BUFF
106	2SC2785	BUFF
108	2SA1206-K1	SYNC AMP
109	2SC2570A	SYNC AMP
110	2SC2570A	SYNC AMP
111	2SA979	COMPARATOR
112	2SC2785	BUFF
113	2SA1175	BUFF
114	2SA979	EQUIVALENT PULSE ELIM
115	2SA979	H/V SYNC GEN
117	2SA1175	H/V SYNC DELAY
118	2SC2785	V SYNC SEP
119	2SC2785	BUFF
120	2SA1175	BUFF
121	2SC2785	BUFF
122	2SC2785	BUFF
123	2SA1175	BUFF
124	2SC2785	HD AMP
125	2SC2785	HD AMP
126	2SA1175	HD AMP
201	2SC2785	BUFF
202	2SC2785	BUFF
203	2SC2785	BUFF
204	2SC2878	BUFF
301	2SC2785	BUFF
302	2SC2785	BUFF
303	2SA1175	BUFF
304	2SC2785	VD AMP
305	2SC2785	VD AMP
306	2SA1175	VD AMP
307	2SC2785	BUFF
D2	1SS119	
4	1SS119	
5	1SS119	
6	1SS119	
7	1SS119	
8	1SS119	
9	1SS119	
11	1SS119	
101	1SS119	
102	1SS119	
103	1SS119	
104	1SS119	
105	1SS119	
106	1SS119	
107	1SS119	
108	1SS119	
110	RD5.6ES-B2	
111	RD5.6ES-B2	
112	RD5.6ES-B2	
202	1SS119	
301	1SS119	
302	1SS119	
303	1SS119	
304	1SS119	

BF board (SYNC PROCESSOR)

IC	002 101 102 103 104 105 106 201 202 203 204 205 206 301 302 004
Q	108 109 110 111 112 113 114 115 118 119 120 117 106 101 105 104,102,103 126,125 124 123 122 121 306 002 203 202 307 304 204 303 305 201 301 302
D	101 102 103 104 105 108 111 106 107 005 006 007 004 011 008,009 303 304 202 302 301 002 110 112
ADJ TP	TP001 TP002 TP101 TP102 TP103 TP104 TP105 TP106 TP107 TP108 TP109 TP201 RV101 RV102 RV201 RV202 RV203 RV204 RV301 TP301 TP302 TP303

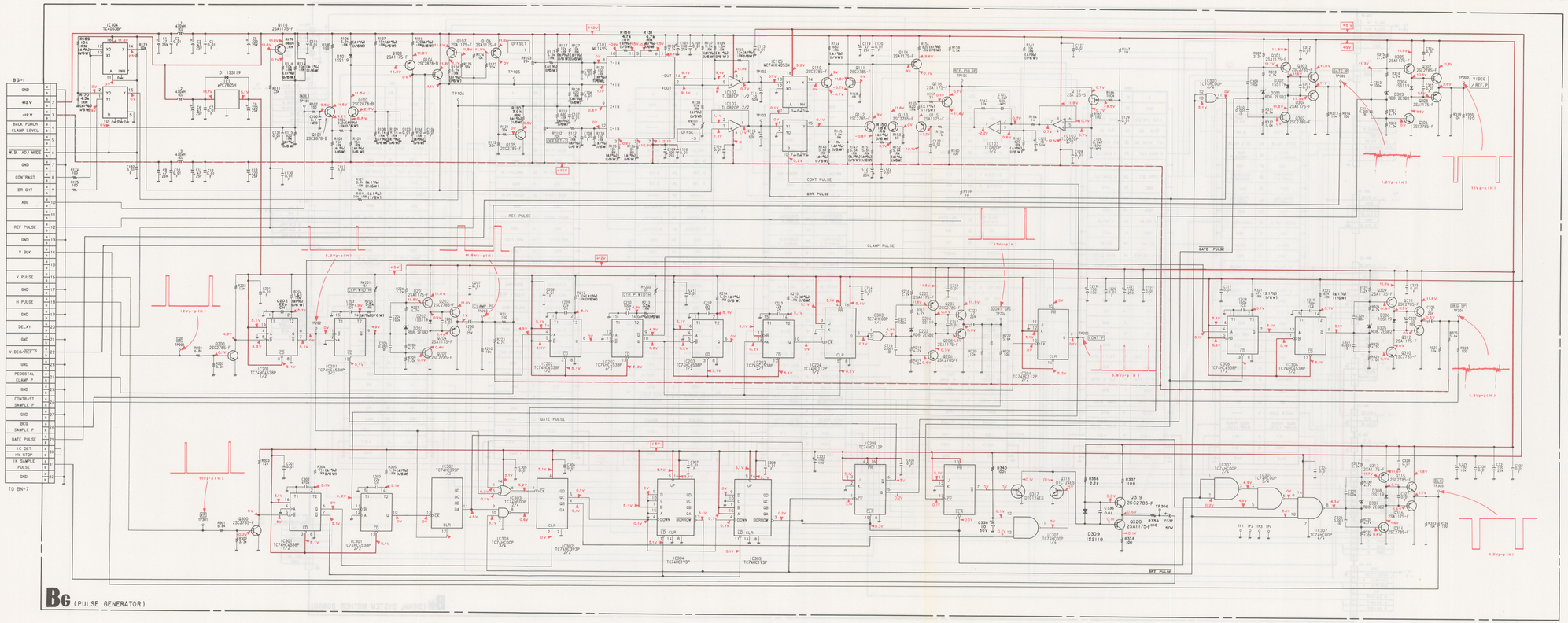


• : Conductor side pattern
• : Component side pattern

BG board (PULSE GENERATOR)

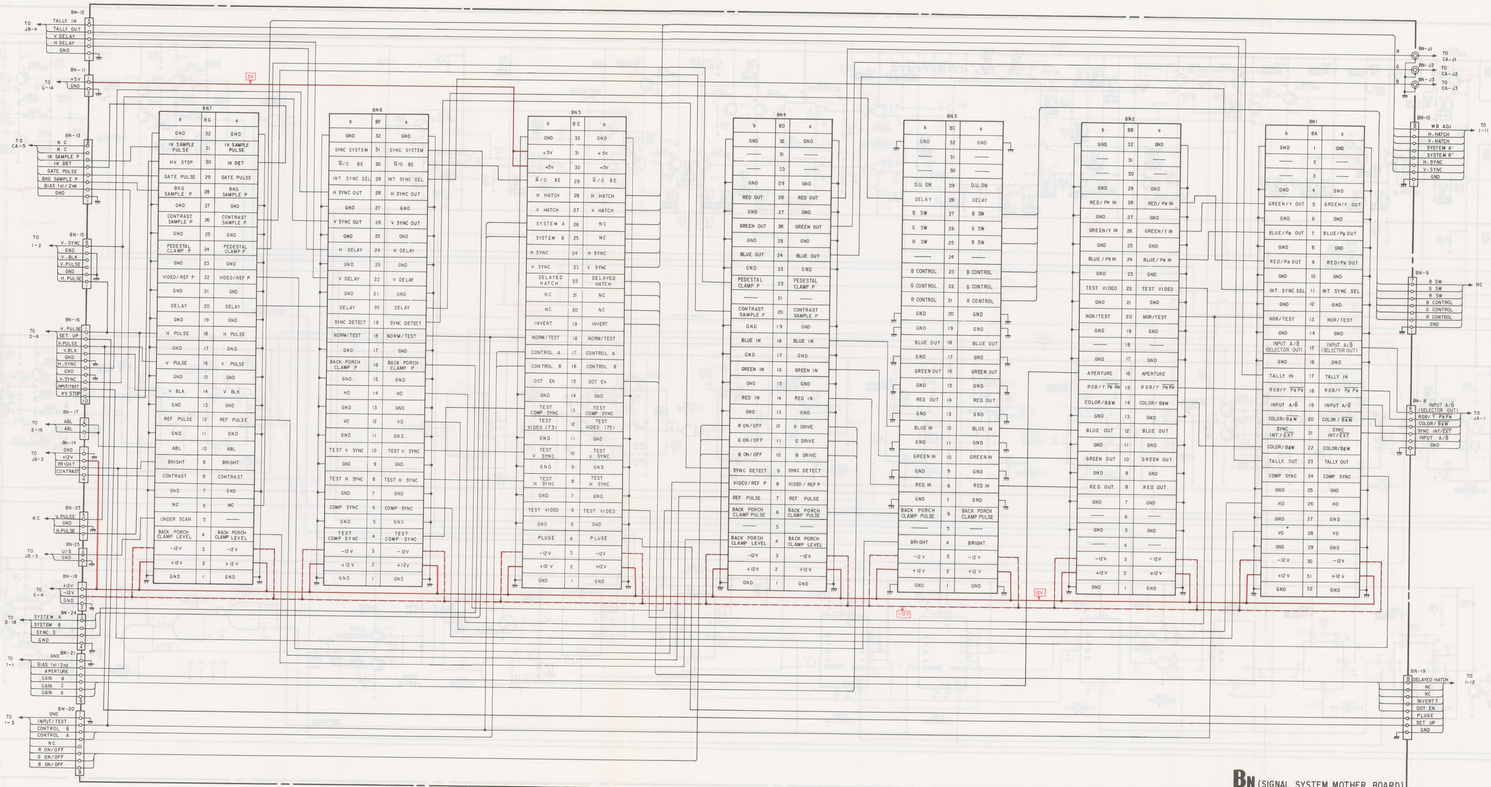
| | | |

BG board (PULSE GENERATOR)

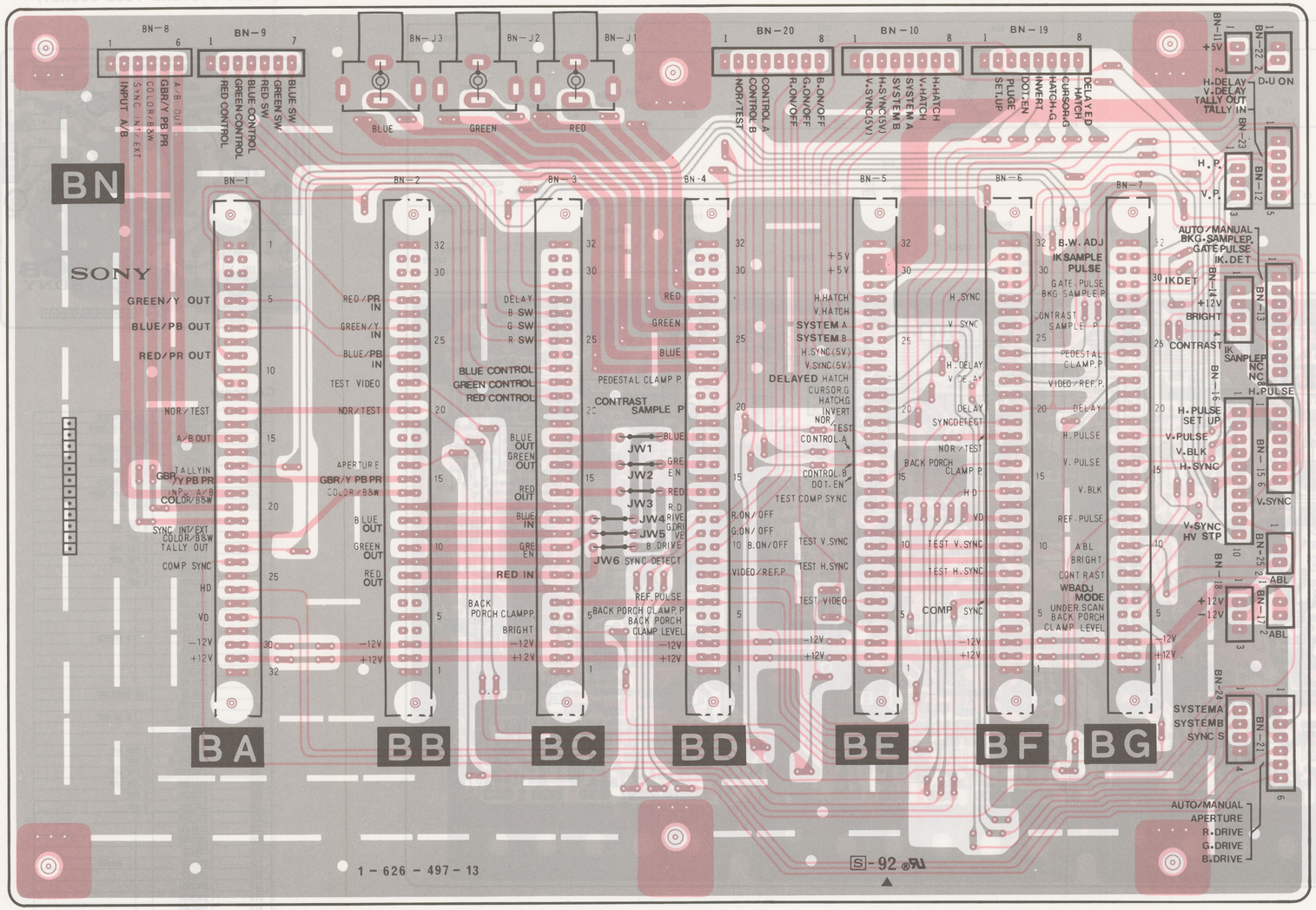


BN BN

BN board (SIGNAL SYSTEM MOTHER BOARD)



BN board (SIGNAL SYSTEM MOTHER BOARD)

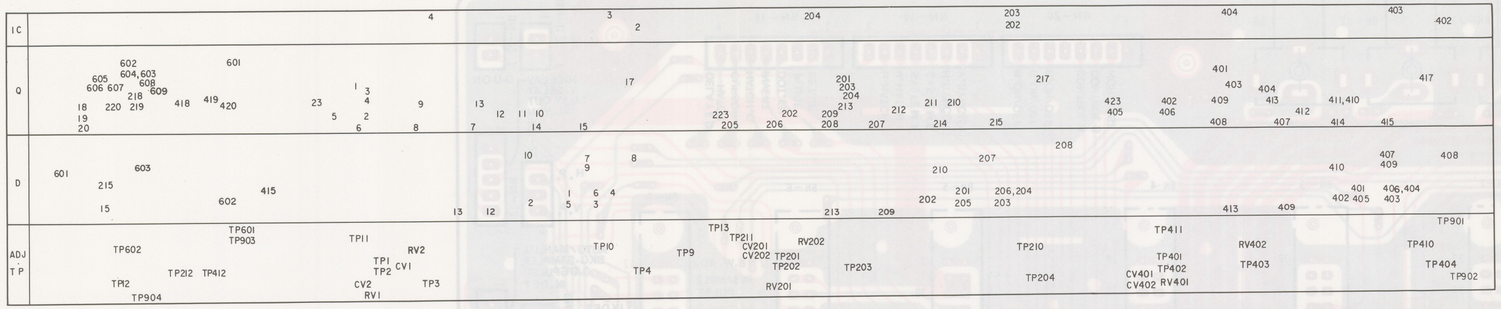


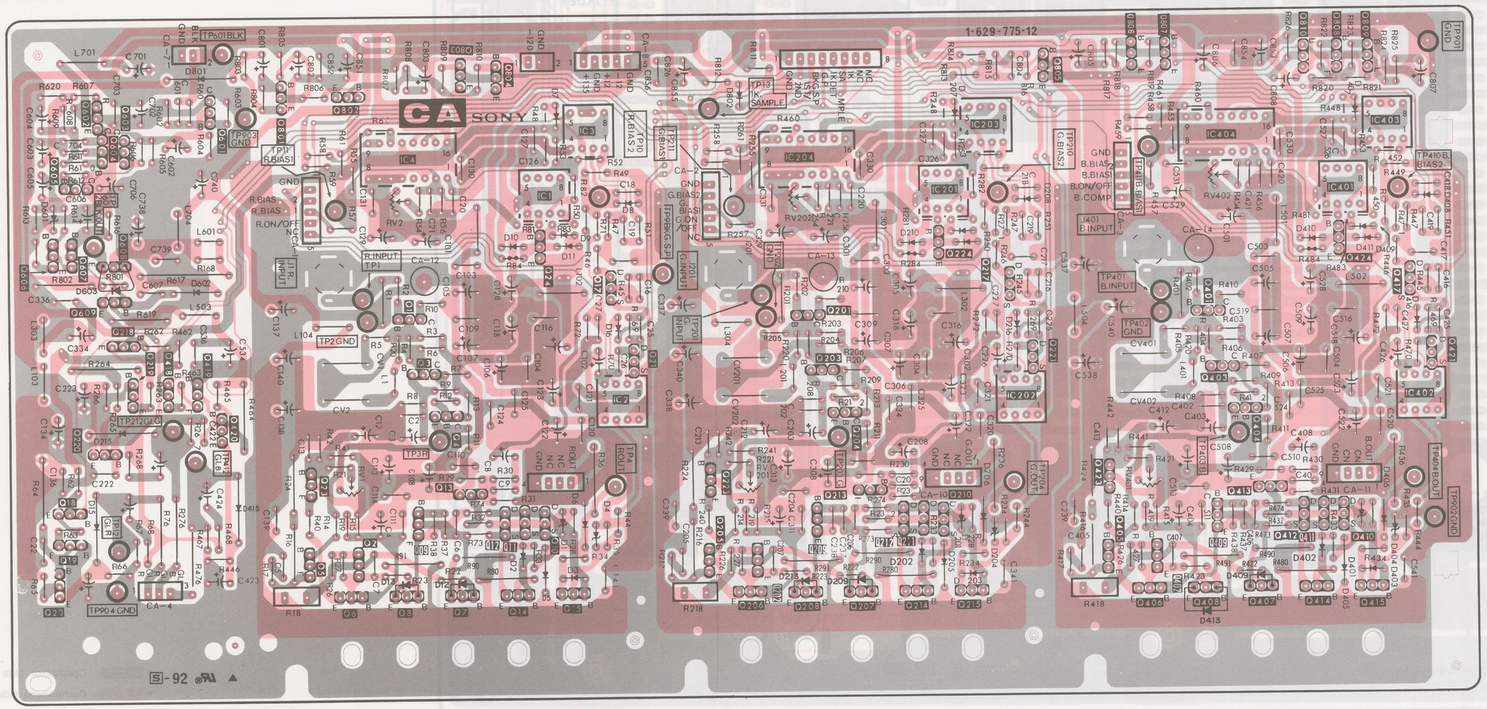
: Conductor side pattern
: Component side pattern

5. DIAGRAMS

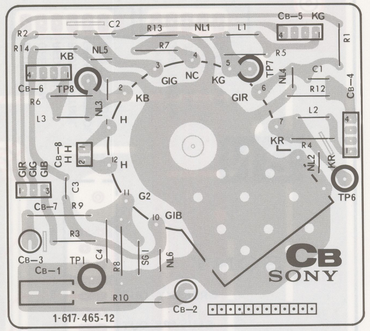
CA, CB CA, CB

CA board (VIDEO OUTPUT)





CB board (PICTURE TUBE SOCKET)



CA board

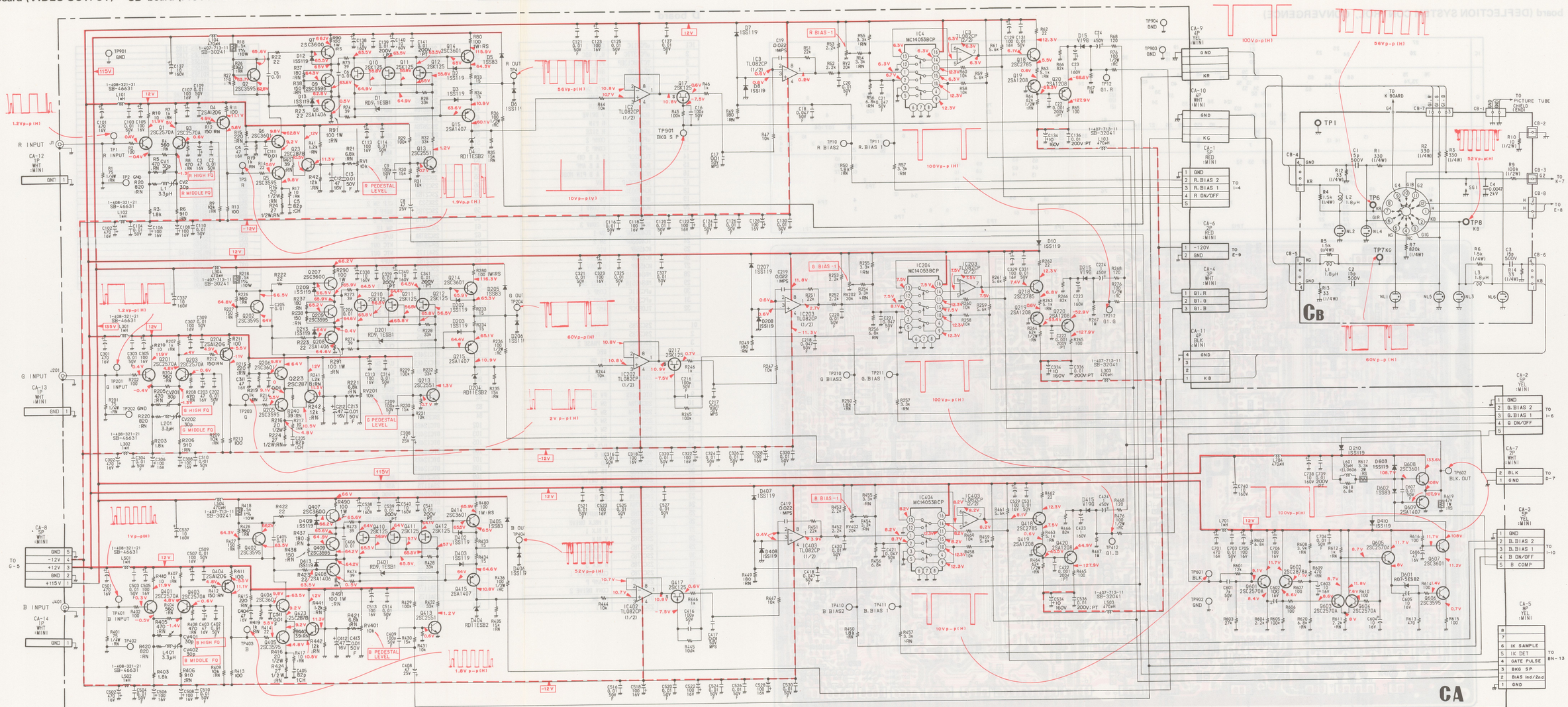
IC2	TL082CP	IKR DETECTOR
3	TL082CP	ERROR AMP/BUFF
4	MC14053BCP	R G1 SW
202	TL082CP	IKG DETECTOR
203	TL082CP	ERROR AMP/BUFF
204	MC14053BCP	G G1 SW
402	TL082CP	IKB DETECTOR
403	TL082CP	ERROR AMP/BUFF
404	MC14053BCP	B G1 SW
Q1	2SC2570A	R PRE AMP
2	2SC3595	R AMP
3	2SC2570A	R PRE AMP
4	2SA1206	R PRE AMP
5	2SC3595	R AMP
6	2SC3601	R AMP
7	2SC3600	
8	2SA1406	
9	2SC3595	
10	2SK125	
11	2SK125	R BUFFER
12	2SK125	
13	2SC2551	
14	2SC3601	
15	2SA1407	
17	2SK125	IKR SAMPLING
18	2SC2785	
19	2SA1208	R G1 AMP
20	2SA1208	
23	2SA2878A	
201	2SC2570A	G PRE AMP
202	2SC3595-D	G AMP
203	2SC2570A	G PRE AMP
204	2SA1206	G PRE AMP
205	2SC3595	G AMP
206	2SC3601	G AMP
207	2SC3600	
208	2SA1406	
209	2SC3595	
210	2SK125	
211	2SK125	G BUFFER
212	2SK125	
213	2SC2551	
214	2SC3601	
215	2SA1407	
217	2SK125	IKG SAMPLING
218	2SC2785	
219	2SA1208	G G1 AMP
220	2SA1208	
223	2SA2878A	
401	2SC2570A	B PRE AMP
402	2SC3595	B AMP
403	2SC2570A	B PRE AMP
404	2SA1206	B PRE AMP
405	2SC3595	B AMP
406	2SC3601	B AMP
407	2SC3600	
408	2SA1406	
409	2SC3595	
410	2SK125	
411	2SK125	B BUFFER
412	2SK125	
413	2SC2551	
414	2SC3601	
415	2SA1407	
417	2SK125	IKB SAMPLING
418	2SC2785	
419	2SA1208	B G1 AMP
420	2SA1208	
423	2SA2878A	
601	2SC2570A	
602	2SA2878A	
603	2SC2570A	
604	2SC2570A	
605	2SC2570A	BLK PULSE AMP
606	2SC3595	
607	2SC3601	
608	2SC3601	
609	2SA1407	
D1	RD9.1ESB1	
2	1SS119TD	
3	1SS119TD	
7	RD11ESB2	
5	1SS83	
6	1SS83	
7	1SS119TD	
8	1SS119TD	
9	1SS199	
10	1SS199	
15	V19C	CLAMP
201	RD9.1ESB1	
202	1SS119TD	
203	1SS119TD	
204	RD11ESB2	
205	1SS83	
206	1SS83	
207	1SS119TD	
208	1SS119TD	
209	1SS199	
210	1SS199	
215	V19C	CLAMP
401	RD9.1ESB1	
402	1SS119TD	
403	1SS119TD	
404	RD11ESB2	
405	1SS83	
406	1SS83	
407	1SS119TD	
408	1SS119TD	
409	1SS199	
410	1SS199	
415	V19C	CLAMP
601	RD6.8ESB1	
602	1SS83	

• : Conductor side pattern
• : Component side pattern

CA board (VIDEO OUTPUT) CB board (PICTURE TUBE SOCKET)

CA, CB CA, CB

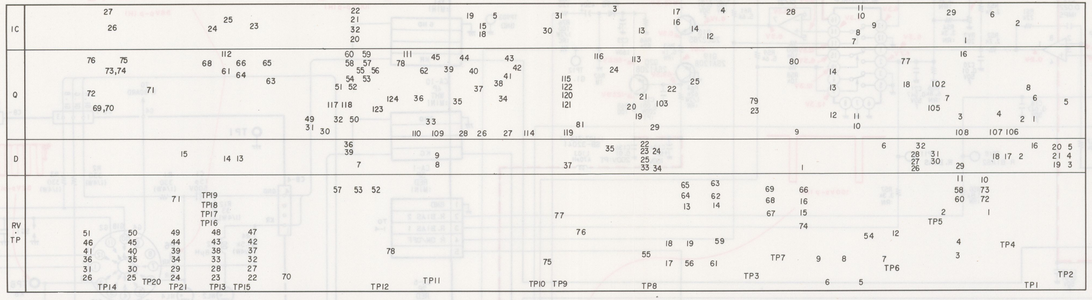
CA, CB

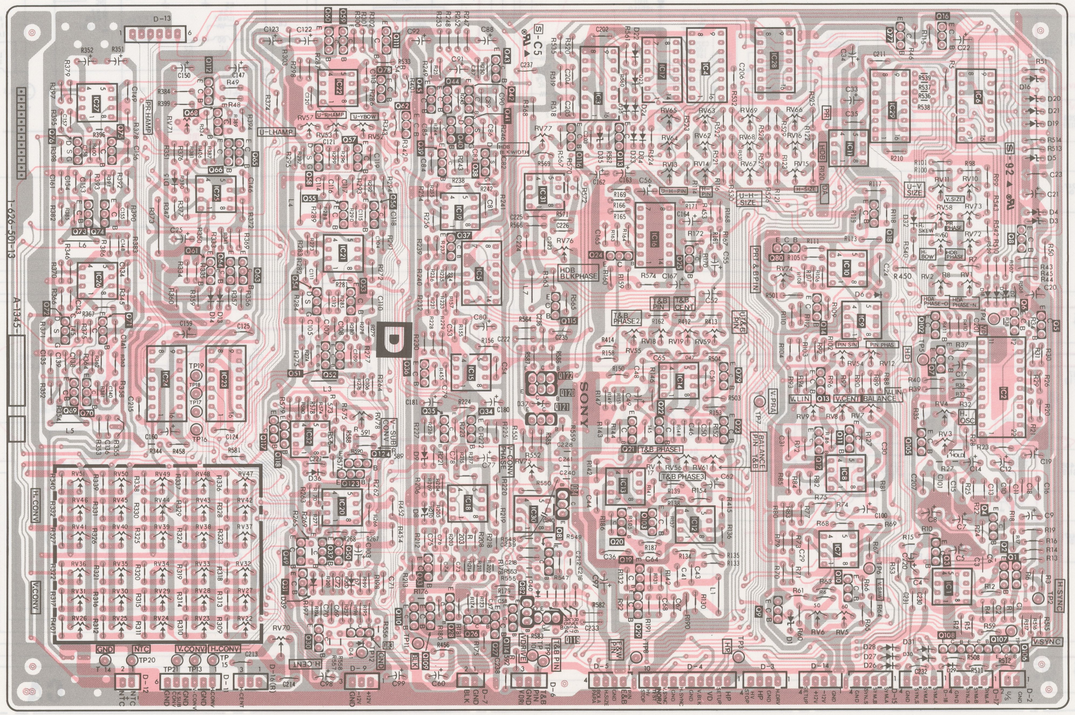


5-57 5-58 5-59

5. DIAGRAMS

D board (DEFLECTION SYSTEM CONTROL, CONVERGENCE)





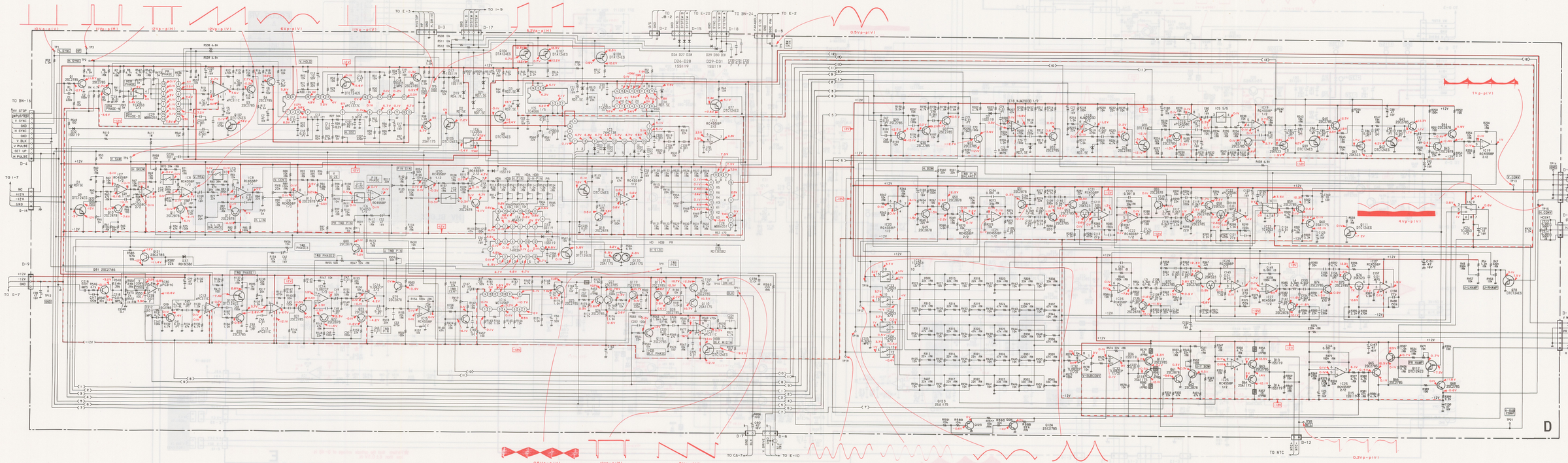
D board

IC1	uPC311C	COMP 1
2	uPC1377C	H,V OSC
3	TC74HC138P	PIN SELECT
4	M54519P	BUFF
5	TC4066BP	FV SW
6	TC40538P	U/S SW
7	RC4558P	V SAW
8	RC4558P	H SIN
9	RC4558P	V DRIVE
10	RC4558P	H PIN
11	RC4558P	H SIZE
12	uPC311C	COMP 2
13	uPC311C	COMP 3
14	TL082CP	T & B (H)
15	RC4558P	T & B AMP
16	MC1496P	T & B PIN MODU
17	TC74HC04P	INV
18	NJM2903D	V COMP
19	RC4558P	2V SAW
20	RC4558P	V CONV 1
21	RC4558P	V CONV 2
22	RC4558P	V CONV 3
23	TC40538P	SW 1
24	TC40538P	SW 2
25	RC4558P	NTC
26	RC4558P	H CONV 1
27	RC4558P	H CONV 2
28	MB84051B	SIZE SW
29	MB84051B	PHASE SW
30	uPC311C	COMP 4
31	uPC311C	COMP 5
32	TL082CP	AMP
Q1	2SC2785	H SYNC
2	2SC2785	H PHASE 1
3	2SC2785	H PHASE 2
4	2SC2785	REG
5	DTC124ES	FV SW
6	2SC2785	BUFF 1
7	2SA1175	BUFF 1
8	DTC124ES	
9	DTC124ES	FV SW
10	2SC2878A	SW 1
11	2SC2878A	SW 2
12	2SC2878A	SW 3
13	2SC2878A	SW 4
14	2SC2878A	SW 5
15	DTC124ES	U/S SW
16	2SC2878A	SW 6
17	2SC2785	HD
18	2SC2785	TB SAW
19	2SC2785	TB DRIVE
20	2SC2878A	SW 7
21	2SC2878A	SW 8
22	2SC2878A	SW 9
23	2SC2785	TB BUFF
24	2SC2785	H MBLK DRIVE
25	2SC2785	H BLK 1
26	2SC2785	V BLK
27	2SC2785	H PULSE
28	2SC2785	H BLK 2
29	2SC2785	H BLK 3
30	2SC2785	CONV DRIVE 1
31	2SC2785	CLAMP P
32	2SC2785	CONV DRIVE 2
33	DTC124ES	FV SW
34	2SC2785	SW 1

37	2SC2785	SW 2
38	2SK523	CLP SW 4
39	DTC124ES	FV SW
40	2SC2785	BUFF 2
41	2SK523	CLP SW 4
42	DTC124ES	FV SW
43	2SC2785	BUFF 3
44	2SC2878A	BUFF 1
45	2SC2878A	CLAMP 1
49	2SC2878A	CLAMP 2
50	2SC2878A	BUFF 2
51	2SC2878A	SW 10
52	2SC2785	AMP 1
53	2SC2785	BUFF 4
54	2SK523	CLP SW 1
55	2SC2878A	SW 11
56	2SC2785	AMP 2
57	2SC2785	BUFF 5
58	2SK523	CLP SW 2
59	2SC2785	BUFF 6
60	2SA1175	BUFF 2
61	2SC2878A	SW 12
62	2SC2878A	U/C SW
63	2SC2878A	NTC OUT
64	2SA1175	NTC OUT
65	2SC2785	BUFF 7
66	2SC2785	BUFF 8
68	2SC2785	BUFF 9
69	2SC2878A	SW 13
70	2SC2785	AMP 3
71	2SC2785	BUFF 10
72	2SK523	CLP SW 3
73	2SC2878A	SW 14
74	2SC2785	AMP 4
75	2SC2785	BUFF 11
76	2SK523	CLP SW 4
77	DTC124ES	
78	DTC124ES	U/S SW
79	2SC2878A	U/S SW
80	2SC2878A	PROG SW
81	2SC2785	BUFF 12
82	2SC2785	BUFF 13
83	2SC2785	
84	2SC2785	
102	DTC124ES	
103	DTC124ES	
105	DTC124ES	
106	DTC124ES	
107	DTC124ES	
108	DTC124ES	
109	2SC2785	AMP 5
110	2SA1175	AMP 1
111	DTC124ES	PROG SW
112	DTC124ES	PROG SW
113	DTC124ES	
114	2SC2785	COMPOSITE BLANKING
115	2SC2785	HDB BLANKING
116	DTC124ES	HDB SW
117	2SC2785	AMP
118	2SC2785	AMP
119	2SC2785	
120	2SA1175	
121	2SC2785	
122	2SA1175	
123	2SA1175	
124	2SC2785	

D001	RD15ES-T1B2	
002	RD15ES-T1B2	
003	RD15ES-T1B2	
004	RD15ES-T1B2	
005	RD15ES-T1B2	
006	1SS199	
007	1SS199	
008	RD7.5ES-T1B2	
009	RD7.5ES-T1B2	
013	1SS199	
014	1SS199	
015	1SS199	
016	RD7.5ES-T1B2	
017	1SS199	
018	1SS199	
019	RD4.7ES-T1B2	
020	RD7.5ES-T1B2	
021	RD7.5ES-T1B2	
022	1SS199	
023	1SS199	
024	1SS199	
025	1SS199	
026	1SS199	
027	1SS199	
028	1SS199	
029	1SS199	
030	1SS199	
031	1SS199	
032	1SS199	
033	1SS199	
034	1SS199	
035	RD13ES-T1B2	
036	1SS199	
037	RD13ES-T1B2	
039	1SS199	
040	1SS199	
041	1SS199	

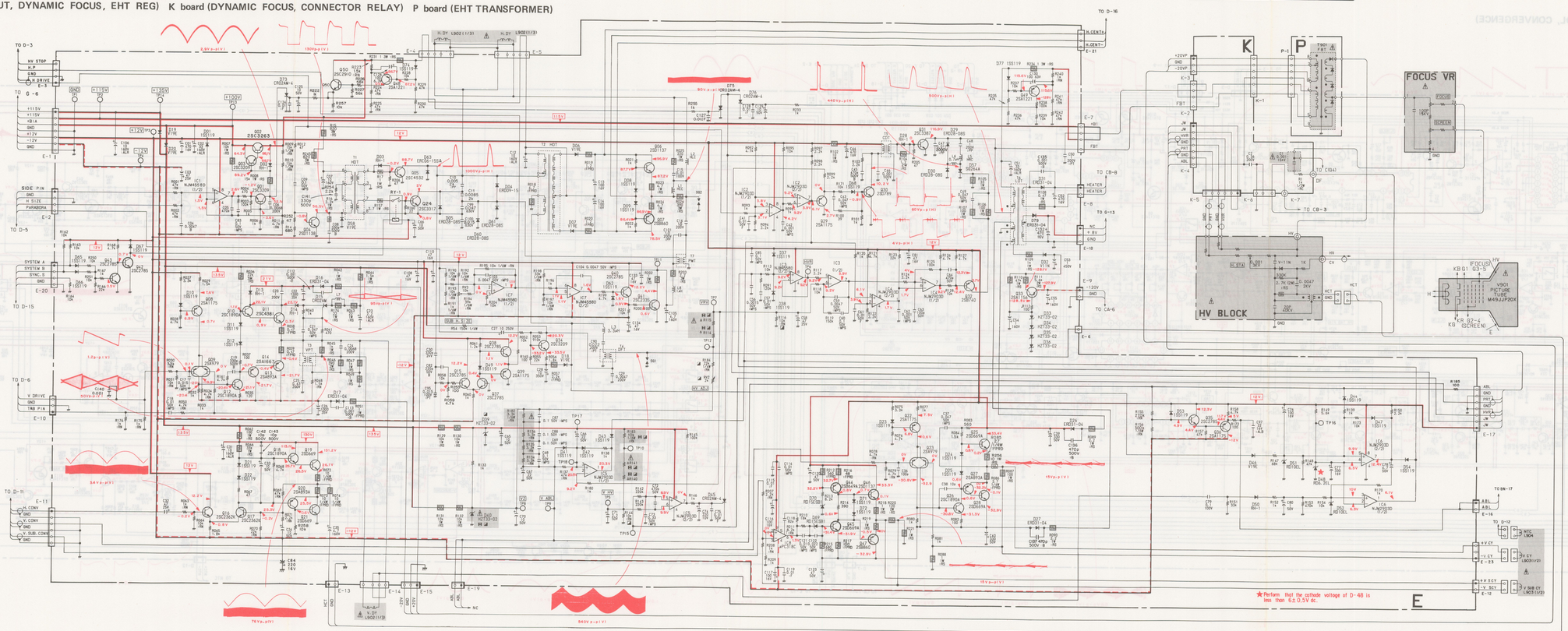
D board (DEFLECTION SYSTEM CONTROL, CONVERGENCE)



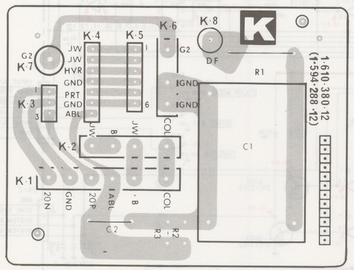
E, K, P E, K, P

E, K, P E, K, P

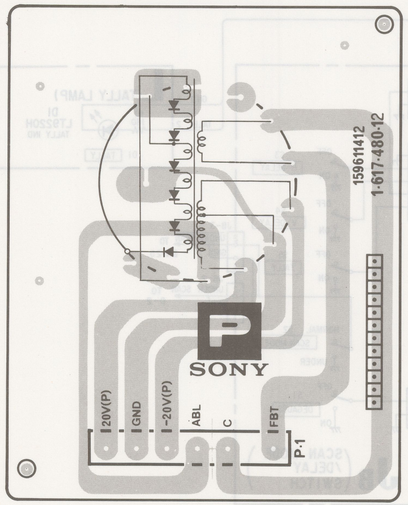
E board (H/V DEFLECTION OUTPUT, DYNAMIC FOCUS, EHT REG) K board (DYNAMIC FOCUS, CONNECTOR RELAY) P board (EHT TRANSFORMER)



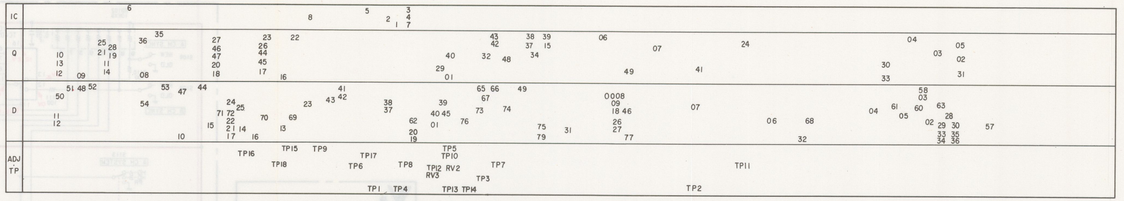
K board (DYNAMIC FOCUS, CONNECTOR RELAY)

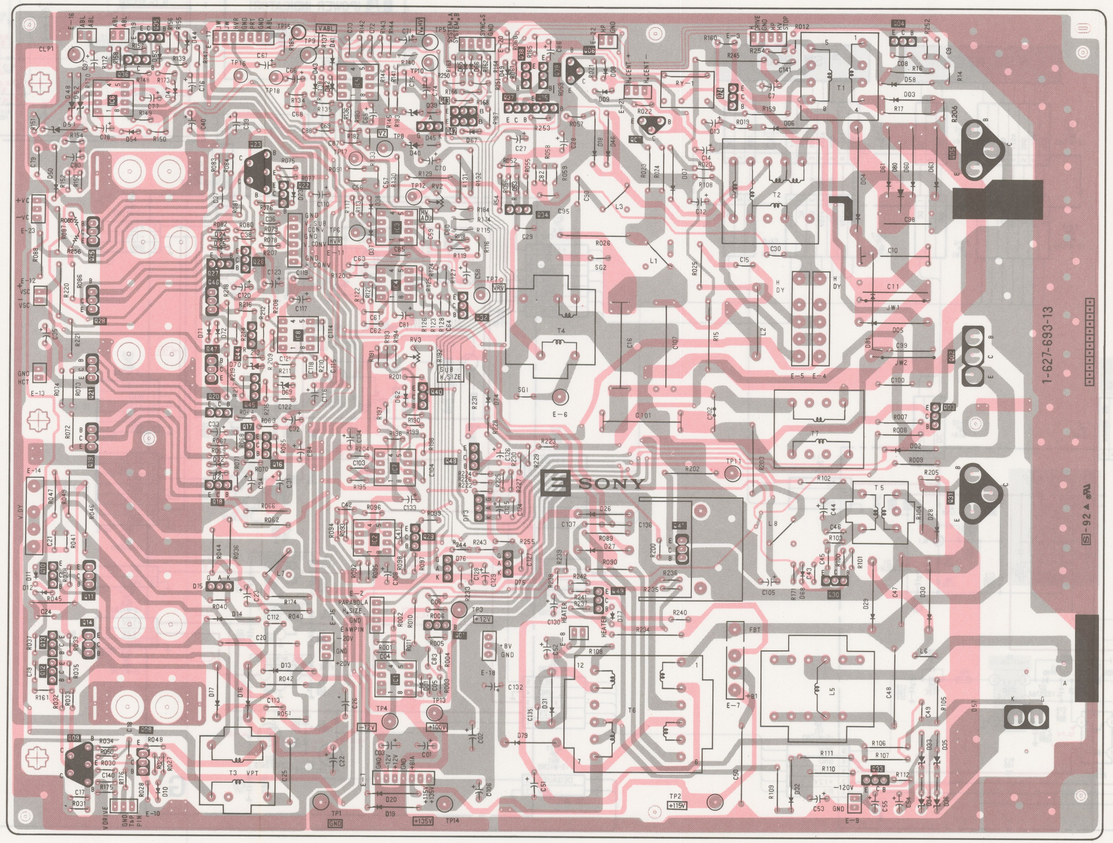


P board (EHT TRANSFORMER)



E board (H/V DEFLECTION OUTPUT, DYNAMIC FOCUS, EHT REG)





E board

IC1	NJM4558D	H PIN
2	NJM2903D	H DRIVE
3	NJM4558D	HV REG
4	NJM2903D	HV DRIVE
5	NJM2903D	HV PROTECT 1
6	NJM2903D	HV PROTECT 2
7	NJM4558D	SUB H PIN
8	UPC318C	V CY DRIVE OUT
Q1	2SC3209	H PIN DRIVE 1
2	2SC3263	H PIN OUT
3	2SC3209	H PIN DRIVE 2
4	2SD1138	H DRIVE 1
5	2SD4532	H OUT
6	2SD1137	H CENT 1
7	2SB860	H CENT 2
8	2SA1175	V BIAS
9	2SA979	V PREAMP
10	2SC1890A	V DRIVE 2
11	2SD1137	V OUT 1
12	2SC1890A	V DRIVE 1
13	2SA933A	V DRIVE 3
14	2SB860	V OUT 2
15	2SC2878A	HP AMP 1
16	2SC2362K	HCT DRIVE 1
17	2SC2362K	HCT DRIVE 2
18	2SC1890A	HCT DRIVE 3
19	2SD669A	HCT OUT 1
20	2SA933A	HCT DRIVE 4
21	2SD669A	HCT OUT 2
22	2SA1175	V CY BIAS
23	2SA979	V CY PREAMP
24	2SC3317	
25	2SD669A	V CY OUT 1
26	2SC1890A	V CY DRIVE 1
27	2SA933A	V CY DRIVE 2
28	2SD669A	V CY OUT 2
29	2SA1175	HV DRIVE 1
30	2SD789	HV DRIVE
31	2SC3387	HV OUT
32	2SB740	HV REG DRIVE
33	2SA1156	-120V REG
34	2SC3209	DF
35	2SC2785	ABL BUFF 2
36	2SA1175	ABL BUFF 1
37	2SC2878A	HP AMP 2
38	2SC2785	HP OUT
39	2SA1175	HP SW
40	2SC2785	PIN DRIVE
41	2SC2335	SUB H PIN OUT
42	2SC2785	PW SW
43	2SC2785	PW SW
44	2SB649A	V CY DRIVE OUT
45	2SD669A	V CY DRIVE OUT
46	2SD1137	V CY DRIVE OUT
47	2SB860	V CY DRIVE OUT
48	2SA1221	I1 PROTECT
49	2SA1221	IK DET
D1	1SS119	H PIN PROT
2	RH-1	H PIN PROT
3	RH-1	H DRIVE
4	ERD09-15	DUMP 3
5	ERD28-08S	SW 1
6	V19EF1	H CENT 1
7	V19EF1	H CENT 2
8	1SS119	BIAS 1
9	1SS119	BIAS 2
10	1SS119	BIAS 3
11	1SS119	BIAS 4
12	1SS119	BIAS 5
13	RH-1	V SUPPLY
14	RH-1	PROTECT
15	CR02AM-4	Vcc SW
16	ERD31-04	+20V RECT
17	ERD31-04	-20V RECT
18	V19EF1	-200V RECT
19	V19EF1	SW 1
20	V19EF1	SW 2
21	1SS119	BIAS 6
22	1SS119	BIAS 7
23	1SS119	BIAS 8
24	1SS119	BIAS 9
25	1SS119	BIAS 10
26	ERD31-04	+30V RECT
27	ERD31-04	-30V RECT
28	RH-1	HV DRIVE
29	ERD28-08S	D UMP 1
30	ERD28-08S	D UMP 2
31	ERD31-04	HEATER REG
32	V11N	-120V REF 1
33	HZT33-02	30V REF 1
34	HZT33-02	30V REF 2
35	HZT33-02	30V REF 3
36	HZT33-02	30V REF 4
37	1SS119	HV PROT 1
38	1SS119	HV PROT 2
39	HZT33-02	HV PROTECT REF 1
40	HZT33-02	HV PROTECT REF 2
41	1SS119	ABL STOP 1
42	1SS119	ABL STOP 2
43	1SS119	HV STOP 1
44	1SS119	HV STOP 2
45	CR02AM-4	HV PROT
46	V19EF1	H STOP 1
47	1SS119	BIAS 11
48	RD6.2EL2	H REF
49	1SS199	
50	RH-1	V STOP 1
51	RD10EL2	IK STOP
52	RD10EL2	V REF
53	1SS119	HV PROT 3
54	1SS119	H STOP OUT
57	SG-264A	HV REC
58	V19EF1	CLAMP
60	ERD28-08S	PIN 1
61	ERD28-08S	PIN 2
62	1SS119	CLAMP
63	ERC06-15SA	DUMP 3
65	1SS119	AND 1
66	1SS119	AND 2
67	1SS119	PROTECT
68	1SS119	BIAS 13
69	RD15ESB1	
70	RD15ESB1	
71	1SS119	
72	1SS119	
73	CR02AM-4	I1 PROTECT
74	1SS119	
75	CR02AM-4	
76	CR02AM-4	
77	1SS119	
79	ERD31-04	

● : Conductor side pattern
● : Component side pattern

G, F, FA, JA, JB, L, YA

G board (REG) F board (FILTER, AC RECT, DEGAUSS) FA board JA board (SIGNAL SELECT CONTRAST/BRIGHTNESS VOLUMES) JB board (SCAN MODE/DELAY SWITCH) L board (TALLY LAMP) YA board (POWER INDICATOR)

G board

IC001	LM7812CT	+12V REG
002	RC7912FA	-12V REG
003	LM7812CT	+12V REG
004	RC7912FA	-12V REG
005	LM7805CT	+5V REG
Q001	DTC124ES	DEGAUSS 1
002	DTA124ES	DEGAUSS 2
003	2SC3263	+BIAS REG
004	2SC3209	
101	2SD669A	
102	2SA1175	
103	2SB649A	
104	2SB649A	
105	2SC2785	
D001	V19E	RBCT
002	1SS199	PROTBCT
003	V19E	
004	V19E	
005	V19E	
006	V19E	
007	V19E	
101	RD6.2ES-T1B2	
102	1SS199	
103	RD6.2ES-T1B2	

F board

IC001	PC817	STOP
Q001	2SC2572	CONVERTER
002	2SA1156	CONVERTER
D001	CR3CM-8	OVP
002	RB406M	RECT
003	V19E	
004	V19E	
005	1S2076A	
006	1S2076A	
007	1S2076A	
008	RD5.1ES-T1B2	
009	V19E	
010	RD9.1ES-T1B1	

※NOTE

MODEL / REF	HDM-1730	HDM-1730E
F901 (FUSE)	6.3A/125V	4A/250V

JA board

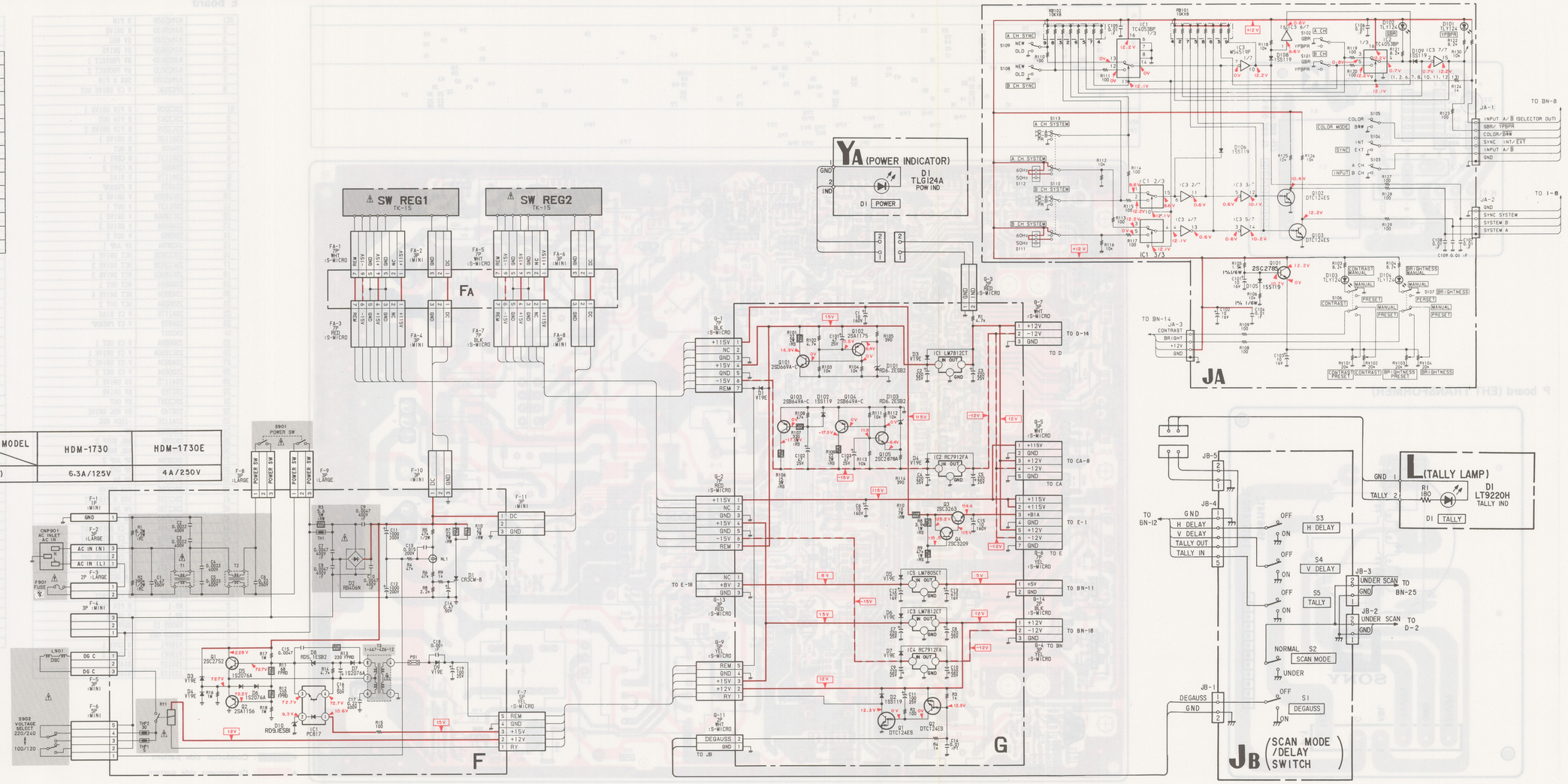
IC1	TC4053BP	SELECTOR
2	TC4053BP	SELECTOR
3	M54519P	SELECTOR
Q101	2SC2785	+10V REG
102	DTC124ES	DRIVE
103	DTC124ES	DRIVE
D101	TLY124	Y/PB/PR INDI
102	TLY124	RGB INDI
103	TLY124	CONTRAST INDI
104	TLY124	BRIGHT INDI
105	1SS119	
106	1SS119	
108	1SS119	
109	1SS119	

L board

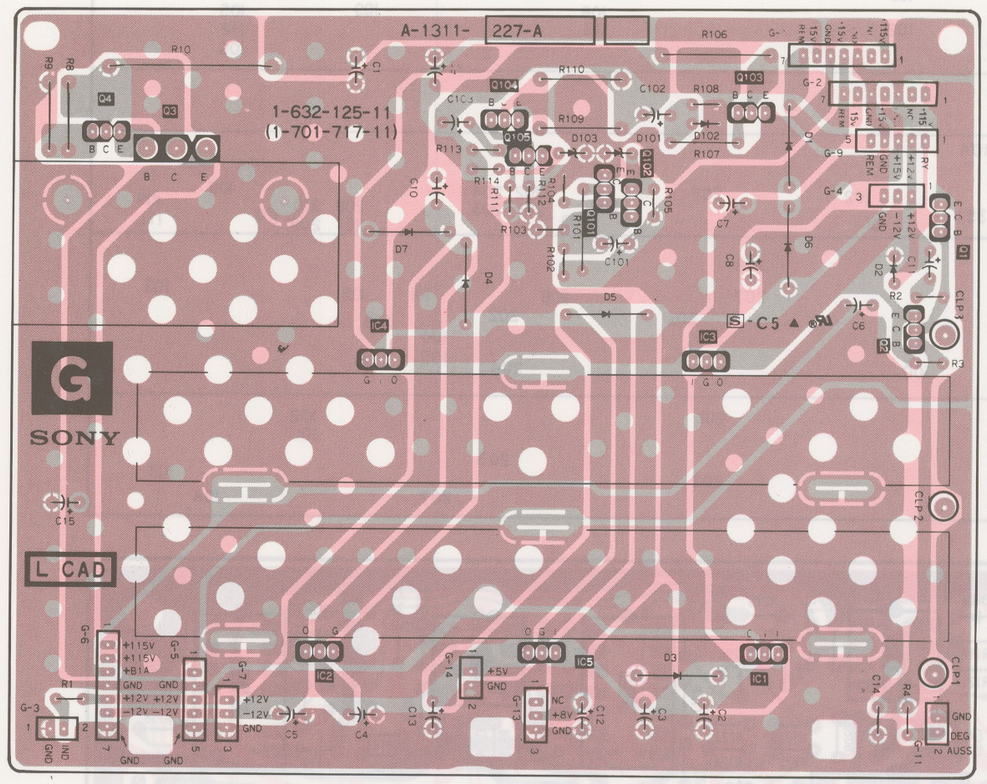
D1	LT-9220H	TALLY

YA board

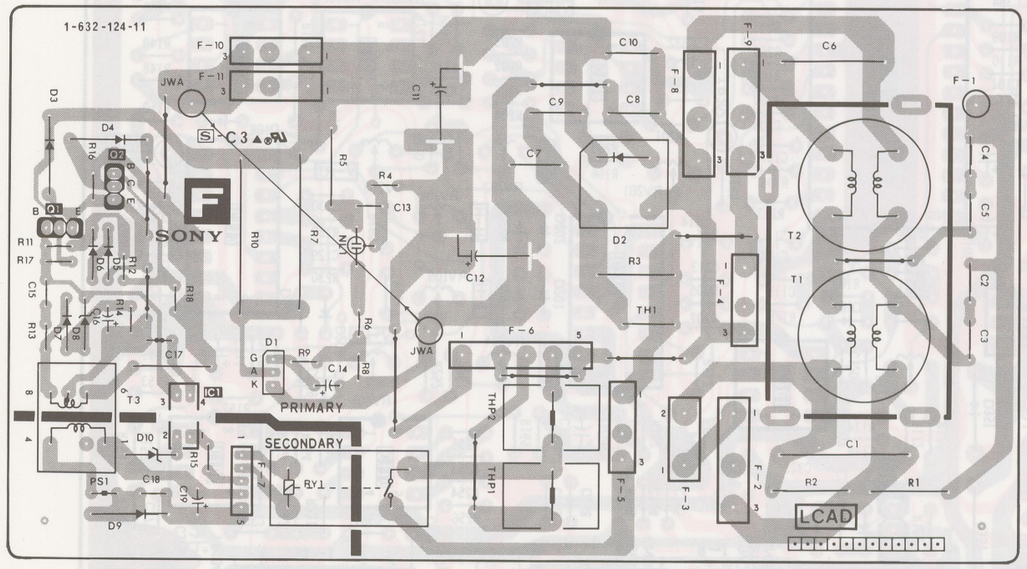
D1	TLG124A	POWER IND



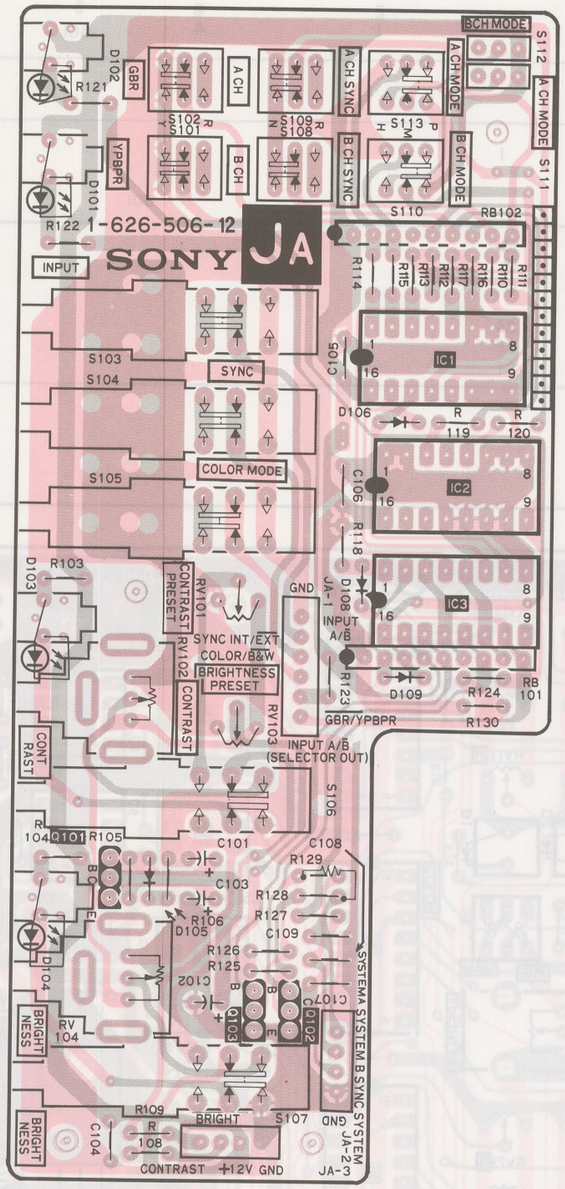
G board (REG)



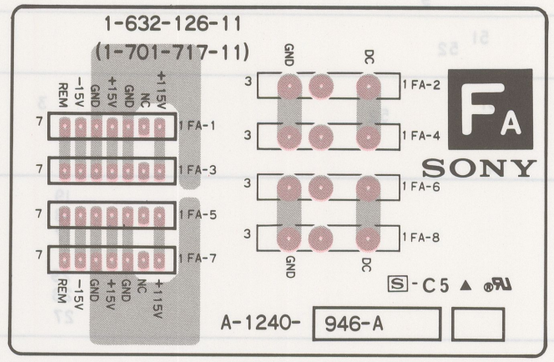
F board (FILTER, AC RECT, DEGAUSS)



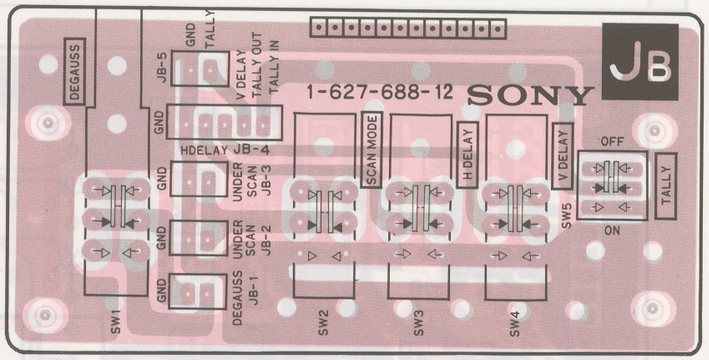
JA board (SIGNAL SELECT CONTRAST/BRIGHTNESS VOLUMES)



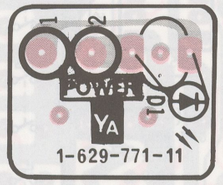
FA board



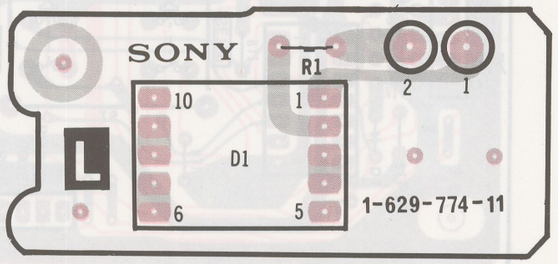
JB board (SCAN MODE/DELAY SWITCH)



YA board (POWER INDICATOR)



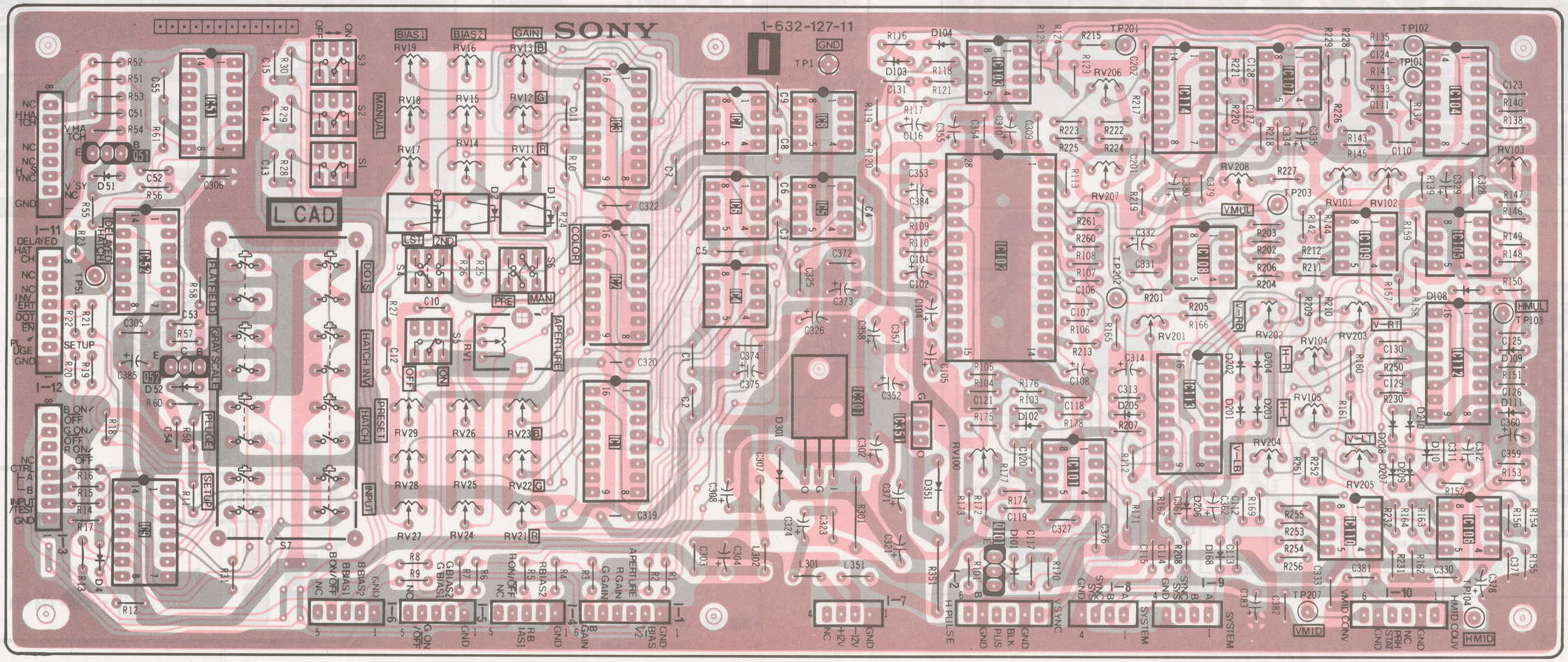
L board (TALLY LAMP)



● : Conductor side pattern
● : Component side pattern

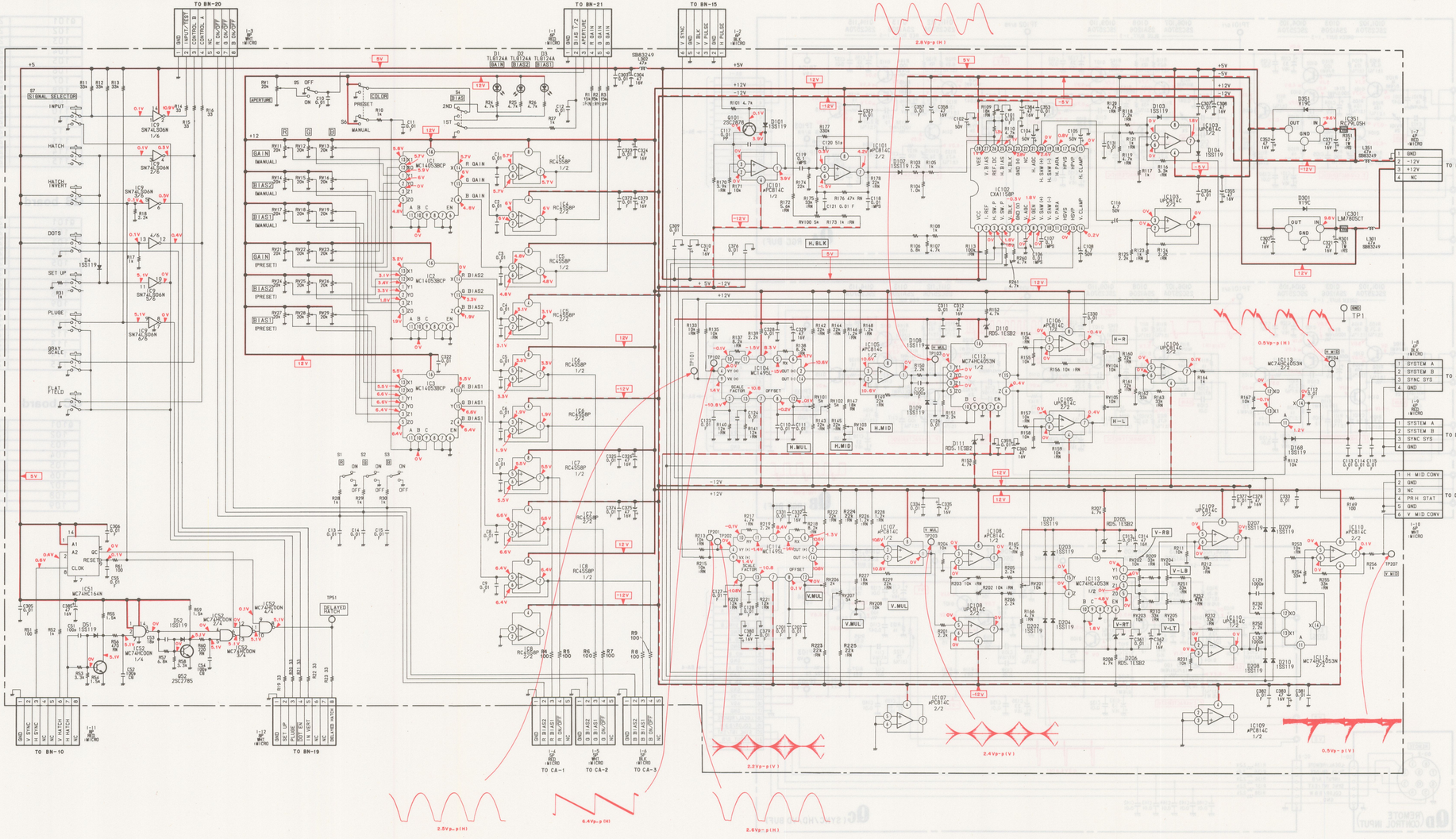
I board (SUB CONVERGENCE, DOUBLE HATCH GEN, WHITE BALANCE, SIGNAL SELECT, APERTURE)

IC	51, 52, 9, 3, 2, 1, 7, 6, 4, 8, 5, 301, 351, 103, 102, 101, 114, 108, 113, 107, 109, 104, 105, 112, 106
Q	51, 52, 101
D	51, 52, 4, 3, 2, 1, 301, 103, 104, 351, 102, 101, 205, 206, 108, 202, 201, 204, 203, 208, 207, 210, 209, 110, 108, 109, 111
RV	19, 18, 17, 16, 15, 14, 13, 12, 11, 29, 28, 27, 26, 25, 24, 23, 22, 21, 206, 207, 201, 208, 202, 101, 102, 203, 104, 105, 205, 103, 100, 204
TP	51, 201, 102, 101, 203, 202, 207, 103, 104



● : Conductor side pattern
● : Component side pattern

I board (SUB CONVERGENCE, DOUBLE HATCH GEN, WHITE BALANCE, SIGNAL SELECT, APERTURE)

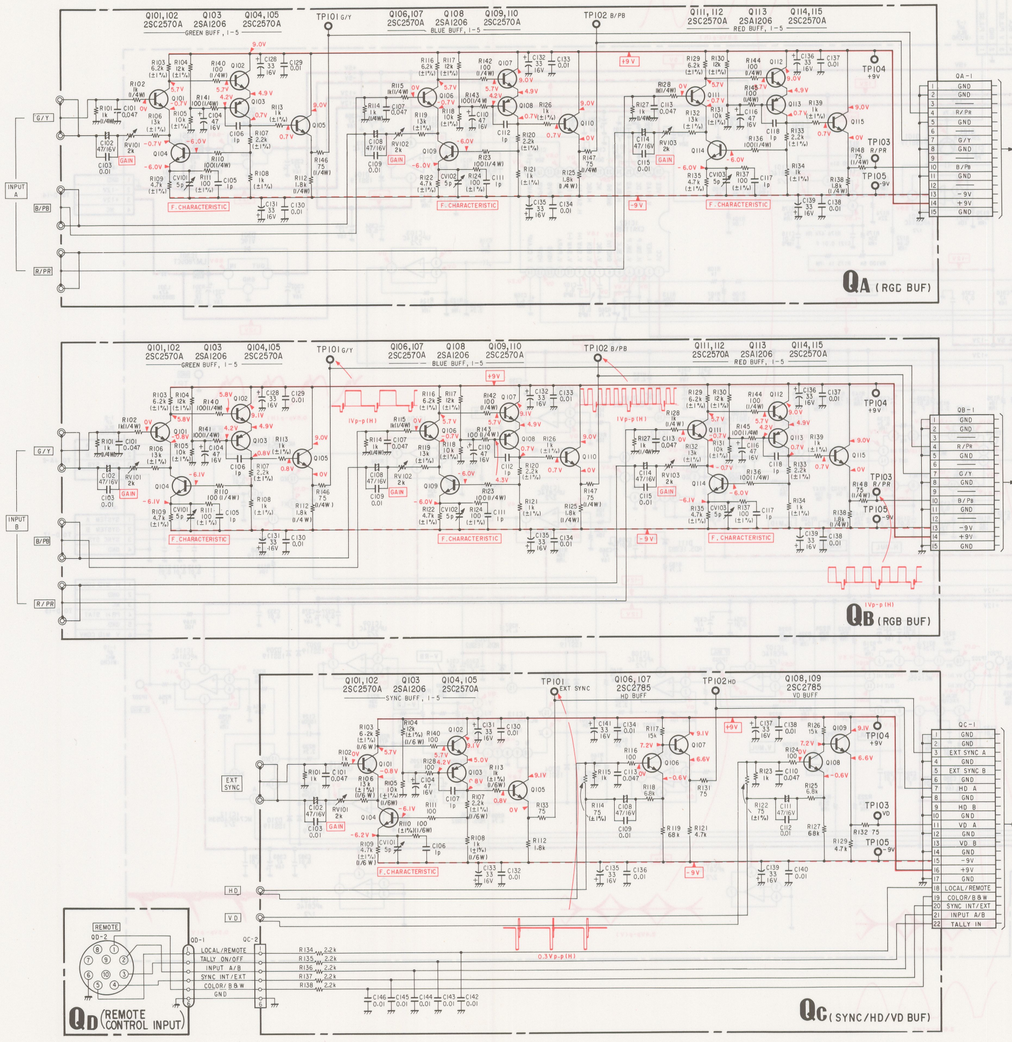


5-81 5-82 5-83

I board

IC 001	MC14053BCP	SW
002	MC14053BCP	SW
003	MC14053BCP	SW
004	RC4558P	BUFFER
005	RC4558P	BUFFER
006	RC4558P	BUFFER
007	RC4558P	BUFFER
008	RC4558P	BUFFER
009	SN74LS06N	DECODER
051	MC74HC164N	DELAY
052	MC74HC00AN	DELAY
101	uPC814C	PHASE SHIFT
102	CXA1115BP	SUB CONVERGENCE SG
103	uPC814C	SLICER
104	MC1495L	MULTIPLIER
105	uPC814C	BUFFER
106	uPC814C	BUFFER
107	uPC814C	BUFFER
108	uPC814C	BUFFER
109	uPC814C	BUFFER
110	uPC814C	BUFFER
112	MC74HC4053N	SW
113	MC74HC4053N	SW
114	MC1495L	MULTIPLIER
301	LM7805CT	LM7805CT
351	RC79L05A	
Q051	2SC2785	DELAY
052	2SC2785	DELAY
101	2SC2878	PHASE SHIFT
D001	TLG124A	
002	TLG124A	
003	TLG124A	
004	1SS119	
051	1SS119	
052	1SS119	
101	1SS119	
102	1SS119	
103	1SS119	
104	1SS119	
108	1SS119	
109	1SS119	
110	R05.1ES-T1B2	
111	R05.1ES-T1B2	
168	1SS199	
201	1SS199	
202	1SS199	
203	1SS199	
204	1SS199	
205	R05.1ES-T1B2	
206	R05.1ES-T1B2	
207	1SS199	
208	1SS199	
209	1SS199	
210	1SS199	
301	V19C	
351	V19C	

QA board (RGB INPUT) QB board (RGB INPUT) QC board (EXT SYNC/HD/VD INPUT) QD board (REMOTE CONTROL INPUT)



QA, QB, QC, QD

QA board

Q101	2SC2570A	RED BUFF.1
102	2SC2570A	RED BUFF.2
103	2SA1206	RED BUFF.3
104	2SC2570A	RED BUFF.4
105	2SC2570A	RED BUFF.5
106	2SC2570A	GREEN BUFF.1
107	2SC2570A	GREEN BUFF.2
108	2SA1206	GREEN BUFF.3
109	2SC2570A	GREEN BUFF.4
110	2SC2570A	GREEN BUFF.5
111	2SC2570A	BLUE BUFF.1
112	2SC2570A	BLUE BUFF.2
113	2SA1206	BLUE BUFF.3
114	2SC2570A	BLUE BUFF.4
115	2SC2570A	BLUE BUFF.5

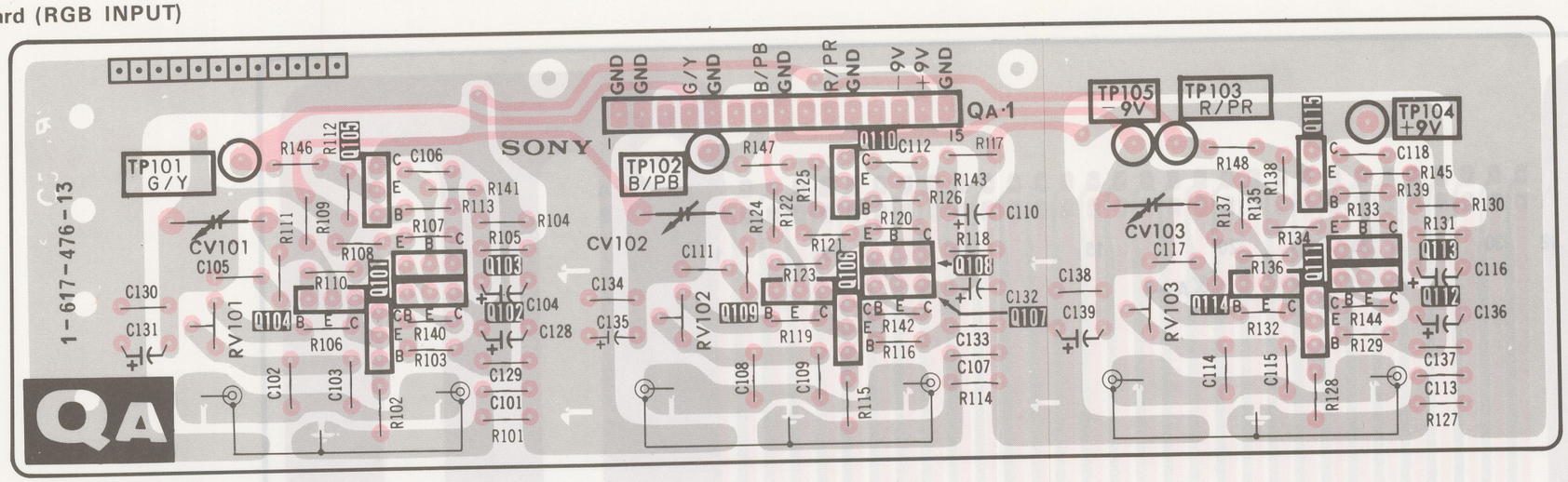
QB board

Q101	2SC2570A	RED BUFF.1
102	2SC2570A	RED BUFF.2
103	2SA1206	RED BUFF.3
104	2SC2570A	RED BUFF.4
105	2SC2570A	RED BUFF.5
106	2SC2570A	GREEN BUFF.1
107	2SC2570A	GREEN BUFF.2
108	2SA1206	GREEN BUFF.3
109	2SC2570A	GREEN BUFF.4
110	2SC2570A	GREEN BUFF.5
111	2SC2570A	BLUE BUFF.1
112	2SC2570A	BLUE BUFF.2
113	2SA1206	BLUE BUFF.3
114	2SC2570A	BLUE BUFF.4
115	2SC2570A	BLUE BUFF.5

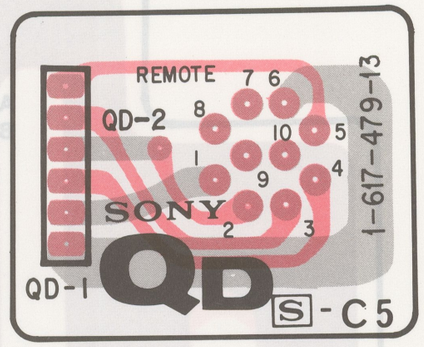
QC board

Q101	2SC2570A	SYNC BUFF.1
102	2SC2570A	SYNC BUFF.2
103	2SA1206	SYNC BUFF.3
104	2SC2570A	SYNC BUFF.4
105	2SC2570A	SYNC BUFF.5
106	2SC2785	HD BUFF 1
107	2SC2785	HD BUFF 2
108	2SC2785	VD BUFF 1
109	2SC2785	VD BUFF 2

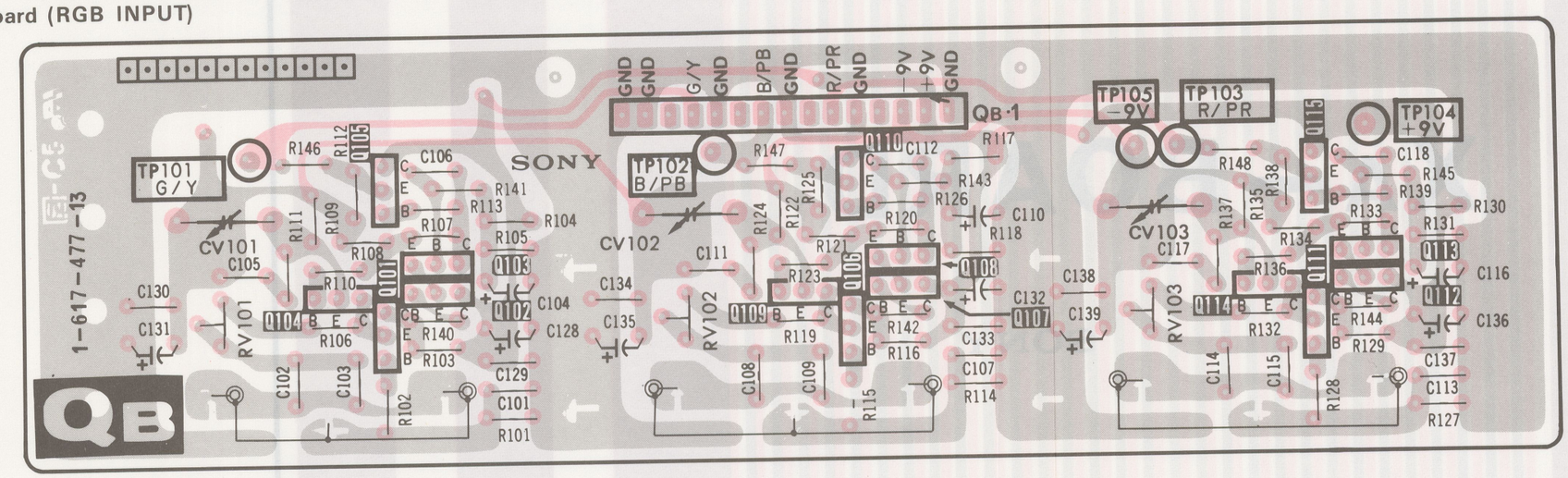
QA board (RGB INPUT)



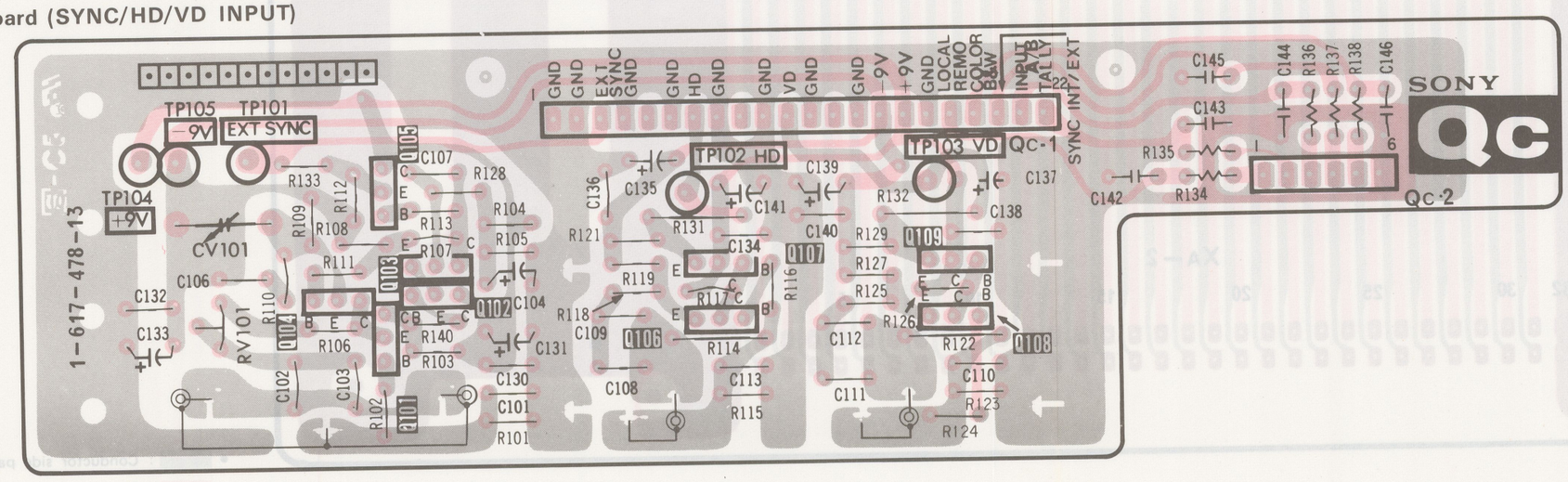
QD board (REMOTE CONTROL INPUT)



QB board (RGB INPUT)

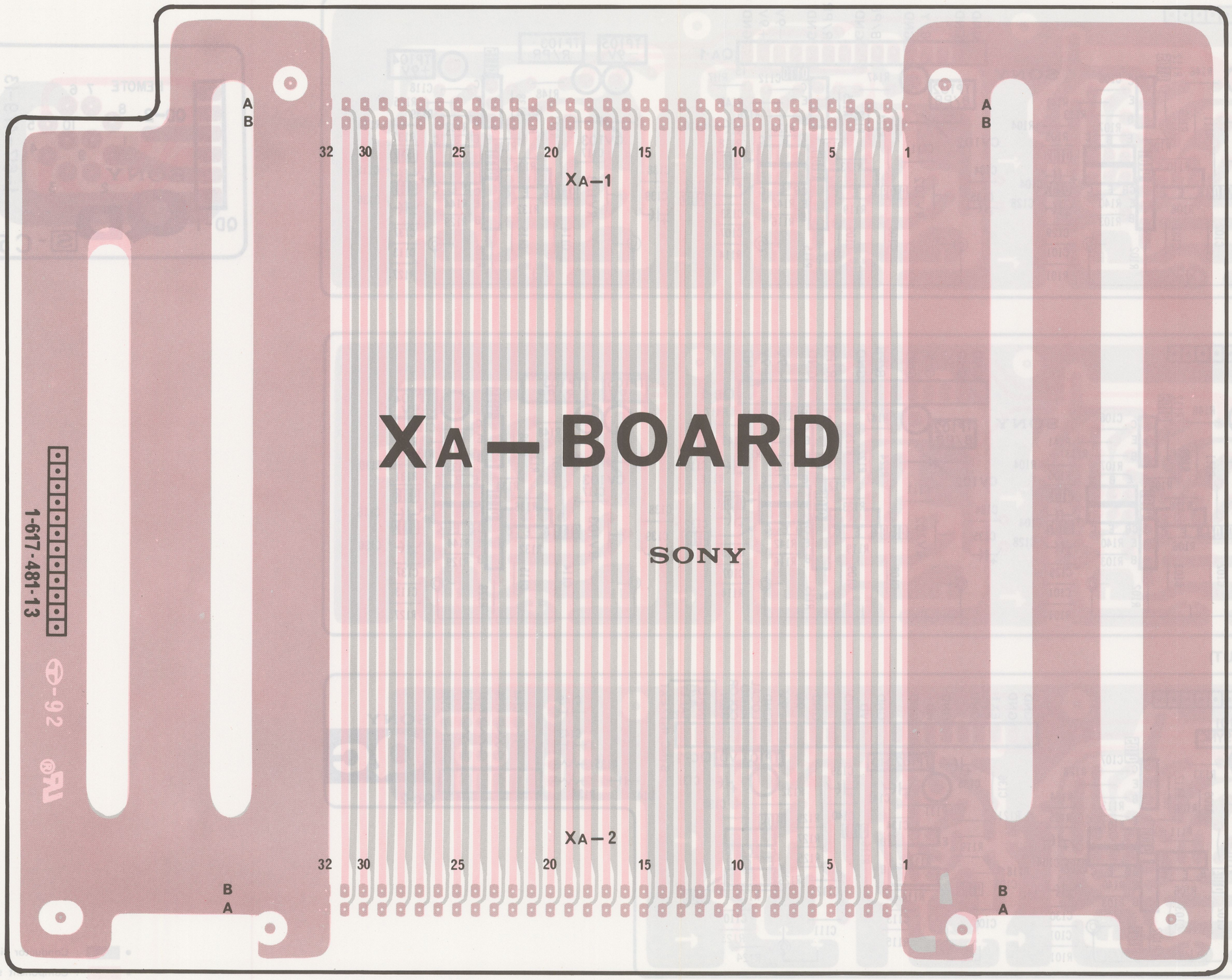


QC board (SYNC/HD/VD INPUT)



• : Conductor side pattern
• : Component side pattern

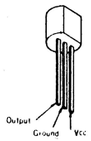
XA board (EXTENSION BOARD)



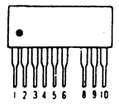
• : Conductor side pattern
• : Component side pattern

5-4. SEMICONDUCTORS

AN78L04
μPC78L05J

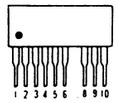


BX-1190

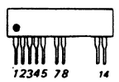


BX-1313

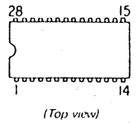
BX-1314



BX-1315

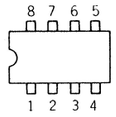


CXA1158P
MBM2764-VSGH

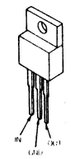


LA7016
M5230L-A

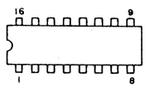
LM2903DQ
NJM2903D
NJM4558D
RC4558P
TL082CP
μPC311C
μPC318C
μPC814C



LM7805CT
LM7812CT
M5F7805
μPC7805H



MB7053-PTD
MB7116H
MB84051B
MC14050BCP
MC74HC4053N
M54519P
SN74HC138N
SN74HC153N
SN74LS137N
SN74LS161AN
SN74LS163AN
SN74LS175N
SN74S163AN
TC4051BPHB
TC4053BP
TC74HC112P
TC74HC138P
TC74HC153P
TC74HC193P
TC74HC4538P



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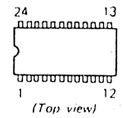
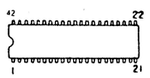
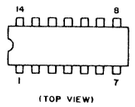


MB885180L

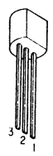


(Top view)

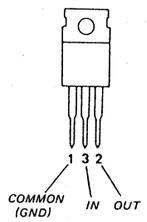
MC1495L
MC1496P
MC74HC00AN
MC74HC164N
MC74HC74N
SN74HC04N
SN74HC05N
SN74HC36N
SN74HC393N
SN74LS00N
SN74LS06N
SN74LS08N
SN74LS32N
SN74LS86N
SN74S00N
SN7406N
SN7407N
TC4066BP
TC5024BP
TC5025BP
TC74HC00P
TC74HC04P
TC74HC74P
TC74HC393P



RC78L05A



RC7912FA



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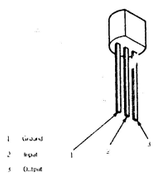

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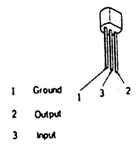
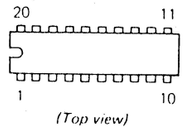
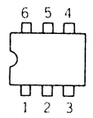


SN74S374N



TX-429M



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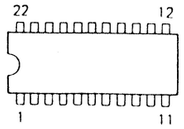

μPC574J-G

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2SA1206
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2SC3623A

2SA1048
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DTC114ES
DTC124ES

2SA1156
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2SB649A
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2SC3600
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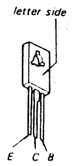

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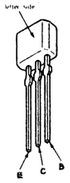

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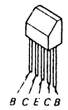
2SB716
2SB739
2SB740
2SD788
2SD789

2SA1221
2SC3209

2SA979



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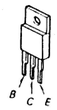

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2SC3263
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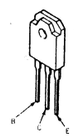

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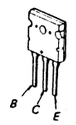

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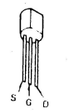
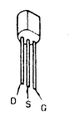


2SK523L2



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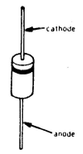
1SS83
ERD09-15
ERD28-08S
RD10EB2
RD10EL2
RD11EB2
RD13EB3
RD15EB2
RD15ESB2
RD3.9EB1
RD4.7EB2
RD4.7ESB2
RD5.1ESB2
RD5.6EB1
RD5.6EB2
RD6.2EB1
RD6.2EL2
RD7.5ESB2
RD8.2ESB2
RD9.1EB1



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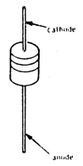
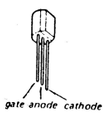
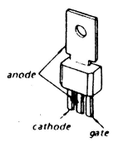
RD10ESB2
RD11ESB2
RD13ESB2
RD15ESB1
RD15ESB2
RD3.9ESB2
RD5.1ESB2
RD6.2ESB2
RD6.8ESB1
RD9.1ESB2



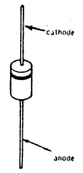
CR02AM-4



CR3CM-8



ERC06-15
ERD31-04
HZT33-02
RH-1A



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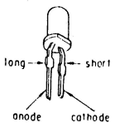
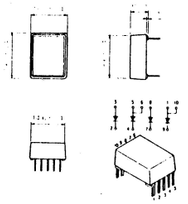
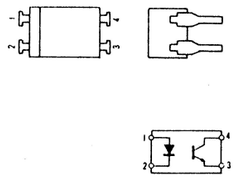
TLG124A
TLY124



LT-9220H



PC817



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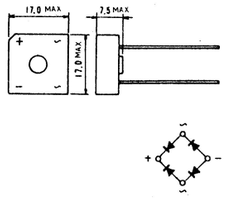
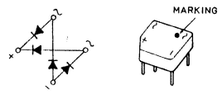
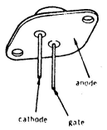


S3WB60Z



SG-264A



V11N
V19C
V19CSS
V19E
V19EF1
V19G

SECTION 6
EXPLODED VIEWS

NOTE:

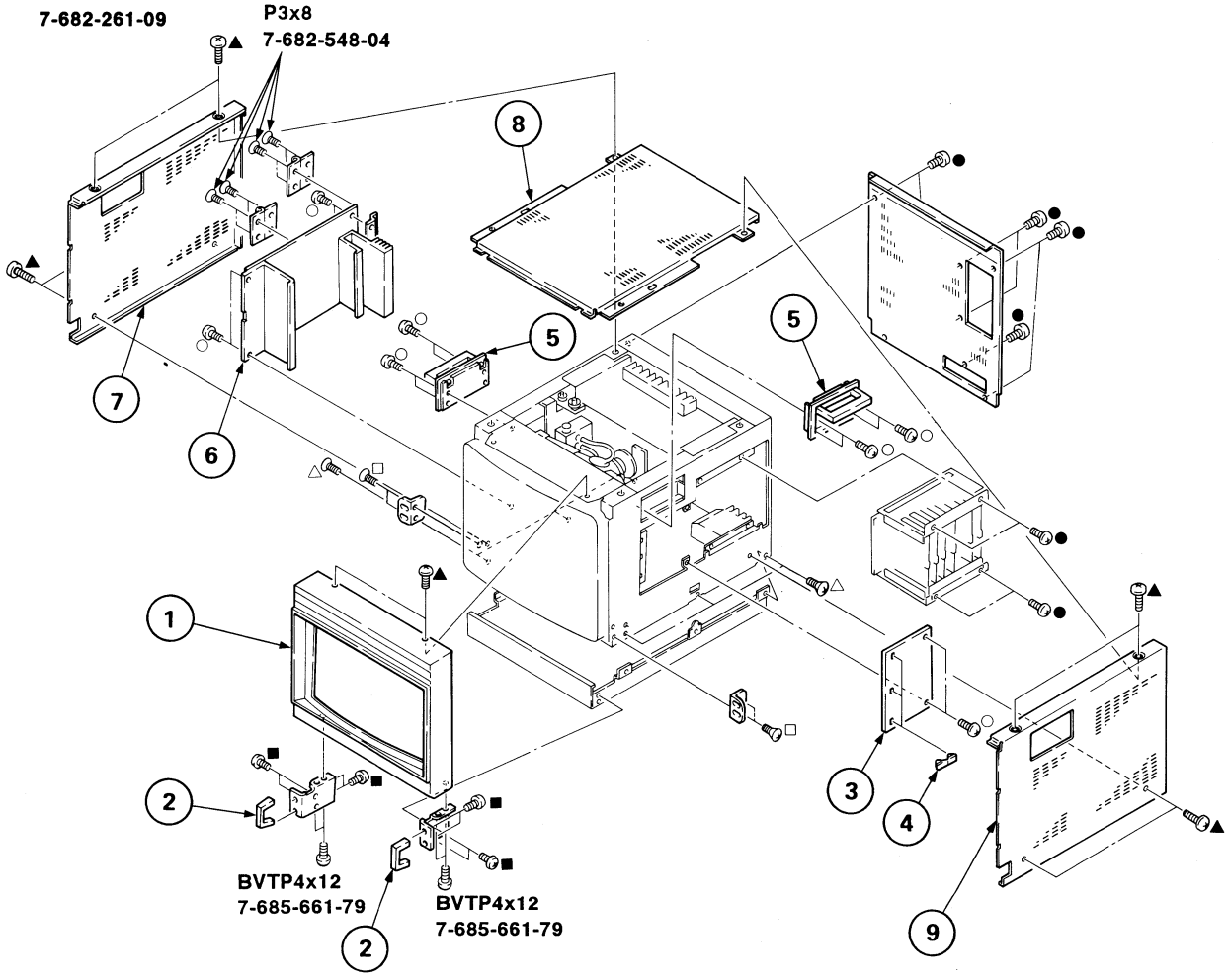
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "＊" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

6-1. BEZEL

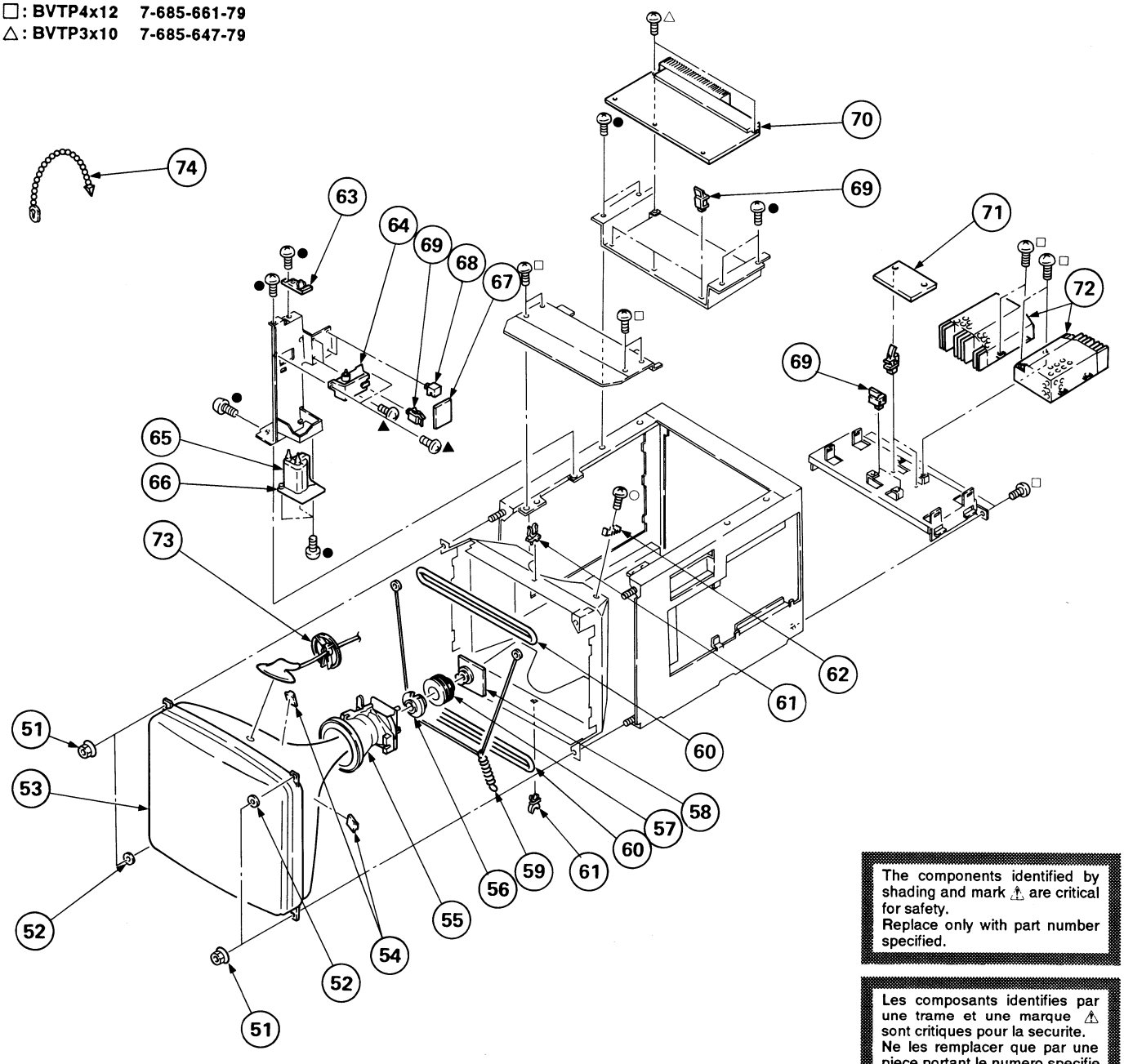
●: BVTP3x8 7-685-646-79
■: PS3x8 7-682-648-09
▲: B4x8 7-682-561-09
○: P3x8 7-682-548-09
□: K3x6 7-682-247-09
△: K4x8 7-682-261-09



REF. NO.	PART NO.	DESCRIPTION	REMARK
1	X-4378-953-1	BEZEL ASSY	
2	＊4-353-706-00	HANDLE	
3	＊A-1311-227-A	G BOARD, COMPLETE	
4	＊4-313-732-00	CLIP, HINGE, CIRCUIT BOARD	
5	＊X-3642-018-0	HANDLE ASSY	
6	＊A-1345-895-A	E BOARD, COMPLETE	
7	＊4-393-075-01	CABINET (L)	
8	＊4-393-076-01	COVER, TOP	
9	＊4-393-074-01	CABINET (R)	

6-2. CHASSIS BLOCK

●: BVTP3x8 7-685-646-79
▲: BVTP3x12 7-685-648-79
○: BVTT3x5 7-685-870-01
□: BVTP4x12 7-685-661-79
△: BVTP3x10 7-685-647-79



The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

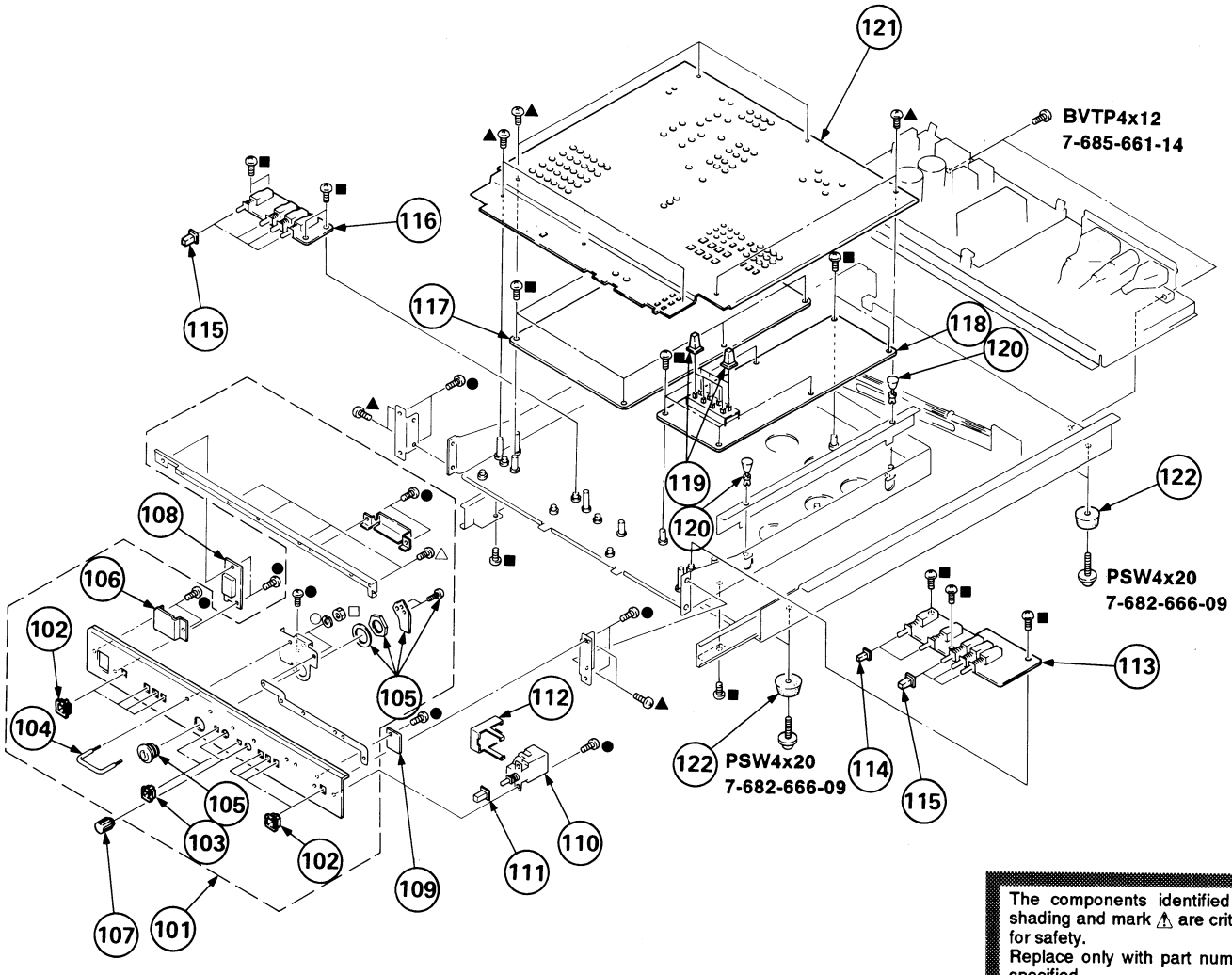
Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

REF. NO.	PART NO.	DESCRIPTION	REMARK
51	4-306-034-00	FLANGE NUT, (B) 5MM	
52	4-363-206-00	WASHER, POSITION, PICTURE TUBE	
53	⚠8-733-053-05	PICTURE TUBE (M49JJP20X)	
54	3-703-003-00	SPACER, DY	
55	⚠1-451-238-71	DEFLECTION YOKE (Y20NBF)	
56	⚠1-452-261-22	PICTURE TUBE NECK ASSY (362)	
57	⚠1-452-117-31	PICTURE TUBE NECK ASSY	
58	*1-617-465-11	CB BOARD	
59	4-303-774-99	SPRING	
60	⚠1-426-087-81	COIL, DEGAUSSING	
61	*4-322-922-00	HOLDER, COIL, DEGAUSSER	
62	*4-309-624-00	TERMINAL, EARTH	

REF. NO.	PART NO.	DESCRIPTION	REMARK
63	⚠1-230-618-11	RESISTOR ASSY, HIGH-VOLTAGE	
64	⚠1-453-096-41	HIGH-VOLTAGE BLOCK (HB-201)	
65	⚠1-439-381-21	TRANSFORMER ASSY, FLYBACK (NX-2002)	
66	*1-617-480-11	P BOARD	
67	*1-610-380-12	K BOARD	
68	*3-701-903-00	HOLDER, PC BOARD (94V-2)	
69	*3-703-141-00	HOLDER, PCB	
70	*A-1296-648-A	CA BOARD, COMPLETE	
71	*1-632-126-11	FA BOARD	
72	⚠1-413-289-11	REGULATOR, SWITCHING (TK-15)	
73	*3-704-372-01	HOLDER, HV CABLE	
74	4-308-870-00	CLIP, LEAD WIRE	

6-3. DRAWER BLOCK

●: BVTP3x8 7-685-646-79
■: P3x6 7-682-547-04
▲: P3x6 7-682-547-09
○: SW3 7-623-208-22
□: N3 7-684-023-04
△: BVTP3x10 7-685-647-79



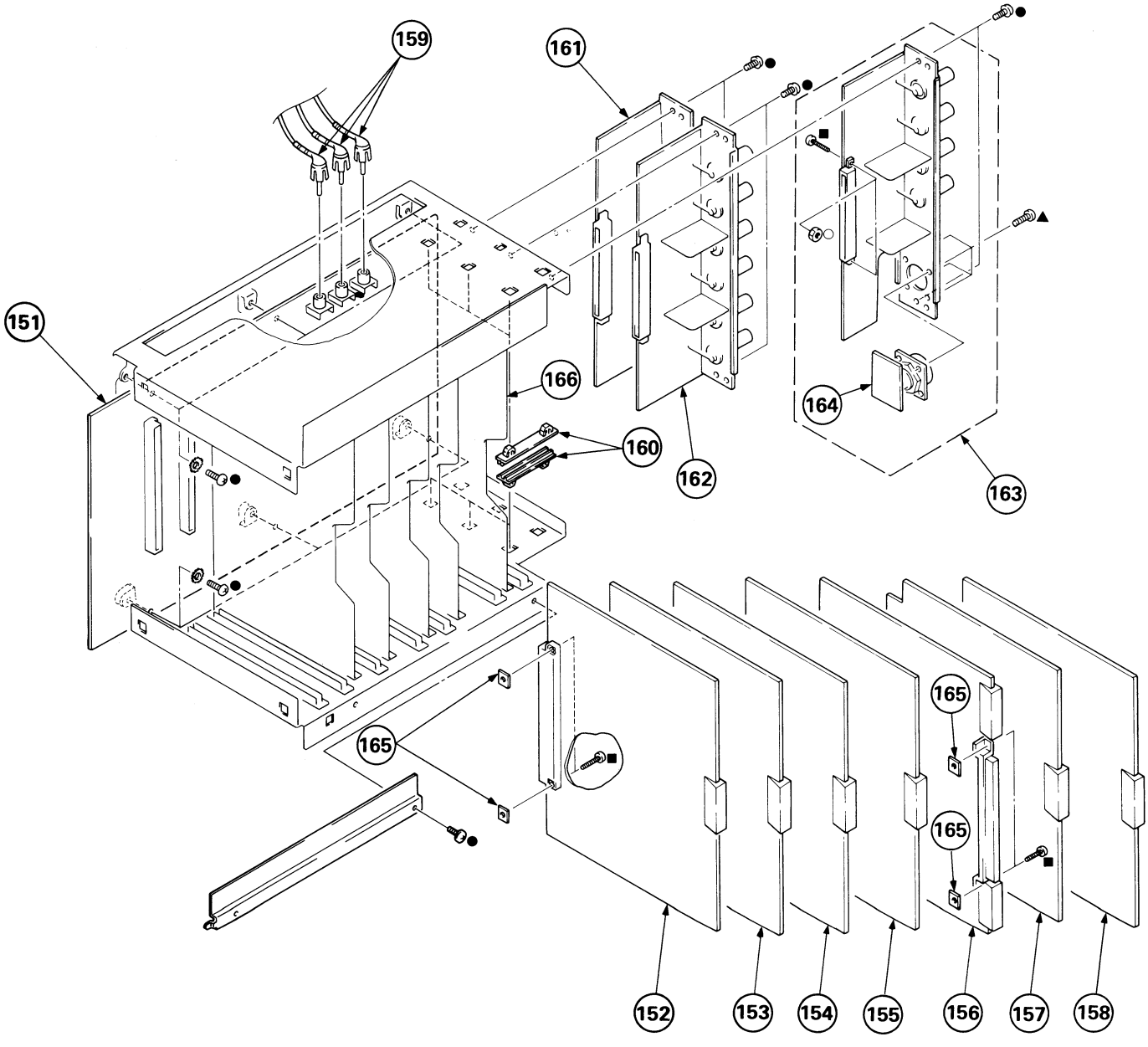
The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

REF. NO.	PART NO.	DESCRIPTION	REMARK
101	X-4378-937-3	PANEL ASSY, CONTROL	102-106
102	4-379-423-11	ESCUTCHEON (A)	
103	4-379-424-11	ESCUTCHEON (B)	
104	4-335-904-02	HANDLE (S)	
105	4-378-917-01	LOCK, CYLINDER	
106	4-353-701-00	COVER, LAMP	
107	4-378-916-01	KNOB, VOL	
108	*1-629-774-11	L BOARD	
109	*1-629-771-11	YA BOARD	
110	⚠1-571-877-11	SWITCH, PUSH (AC POWER)	
111	4-378-925-11	BUTTON (A)	
112	4-373-038-01	COVER, SWITCH, POWER	
113	*1-626-506-11	JA BOARD	
114	4-378-903-11	BUTTON (B)	
115	4-374-839-01	BUTTON (A)	
116	*1-627-688-11	JB BOARD	
117	*A-1345-896-A	D BOARD, COMPLETE	
118	*A-1375-085-A	I BOARD, COMPLETE	
119	4-369-627-01	PUSH BUTTON	
120	3-703-356-00	RIVET, T TYPE (DIA. 3.5X5.5)	
121	*4-393-052-01	COVER (D), PC BOARD	
122	X-4836-202-9	FOOT 30X15 (94HB)	

6-4. SIGNAL BLOCK

●: BVTP3x8 7-685-646-79
■: P2.6x12 7-621-775-68
▲: P3x6 7-682-547-09
○: N2.6 7-622-207-05

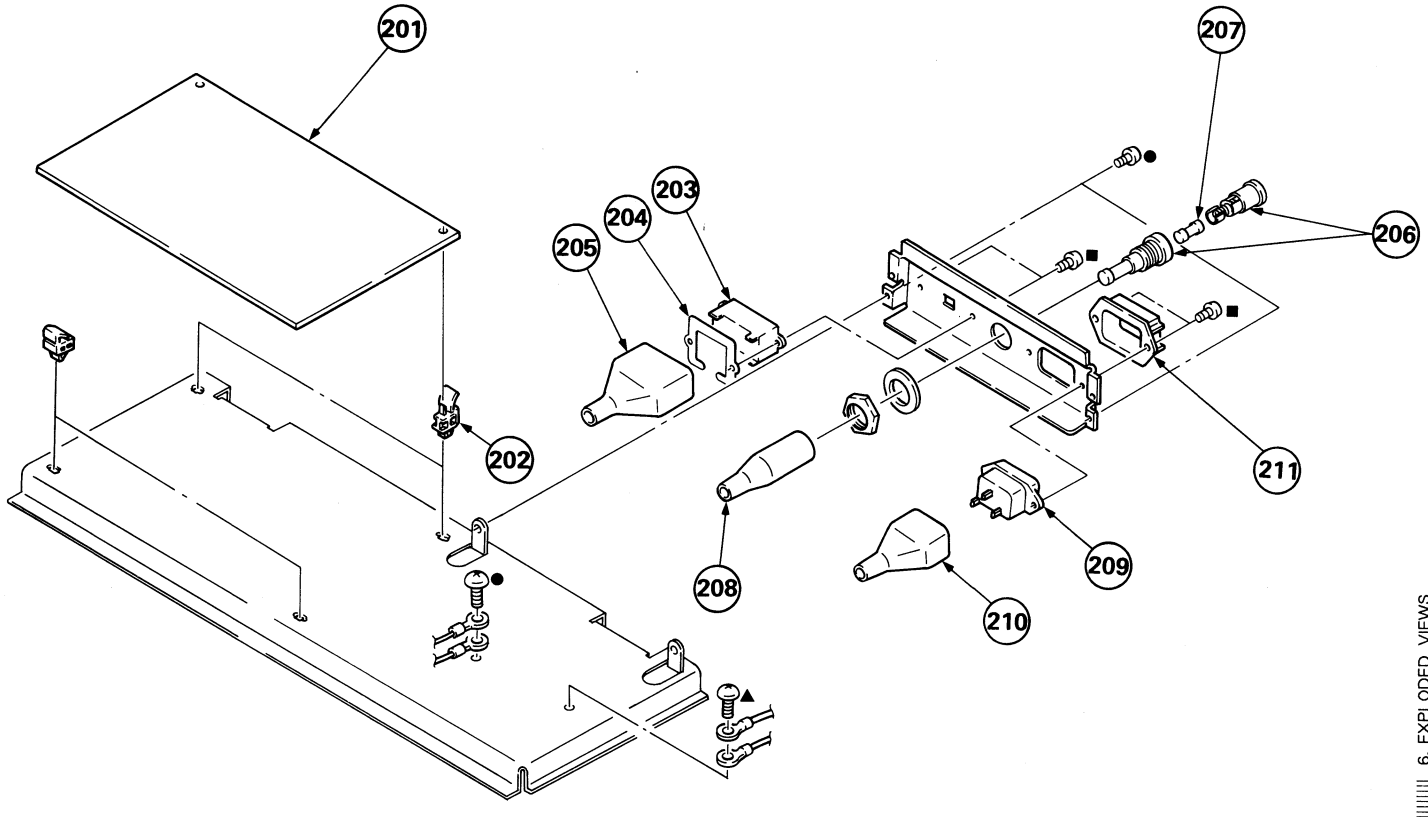


REF. NO.	PART NO.	DESCRIPTION	REMARK
151	*1-626-497-11	BN BOARD	
152	*A-1296-453-A	BG BOARD, COMPLETE	165
153	*A-1296-452-A	BF BOARD, COMPLETE	
154	*A-1296-451-A	BE BOARD, COMPLETE	
155	*A-1296-079-A	BD BOARD, COMPLETE	
156	*A-1389-709-A	XA BOARD, COMPLETE	165
157	*A-1296-450-A	BB BOARD, COMPLETE	
158	*A-1135-524-A	BA BOARD, COMPLETE	

REF. NO.	PART NO.	DESCRIPTION	REMARK
159	*1-555-110-00	CABLE, PIN	
160	*3-680-613-11	SUPPORT, PC BOARD	
161	*A-1275-090-A	QB BOARD, COMPLETE	
162	*A-1275-089-A	QA BOARD, COMPLETE	
163	*A-1275-069-A	QC BOARD, COMPLETE	164
164	*1-617-479-11	QD BOARD	
165	4-378-915-01	NUT (M2.6), PLATE	
166	*4-378-928-01	PLATE, SHIELD	

6-5. F BLOCK

●: BVTP3x8 7-685-646-79
■: P3x8 7-682-548-09
▲: BVTT4x8 7-682-561-04

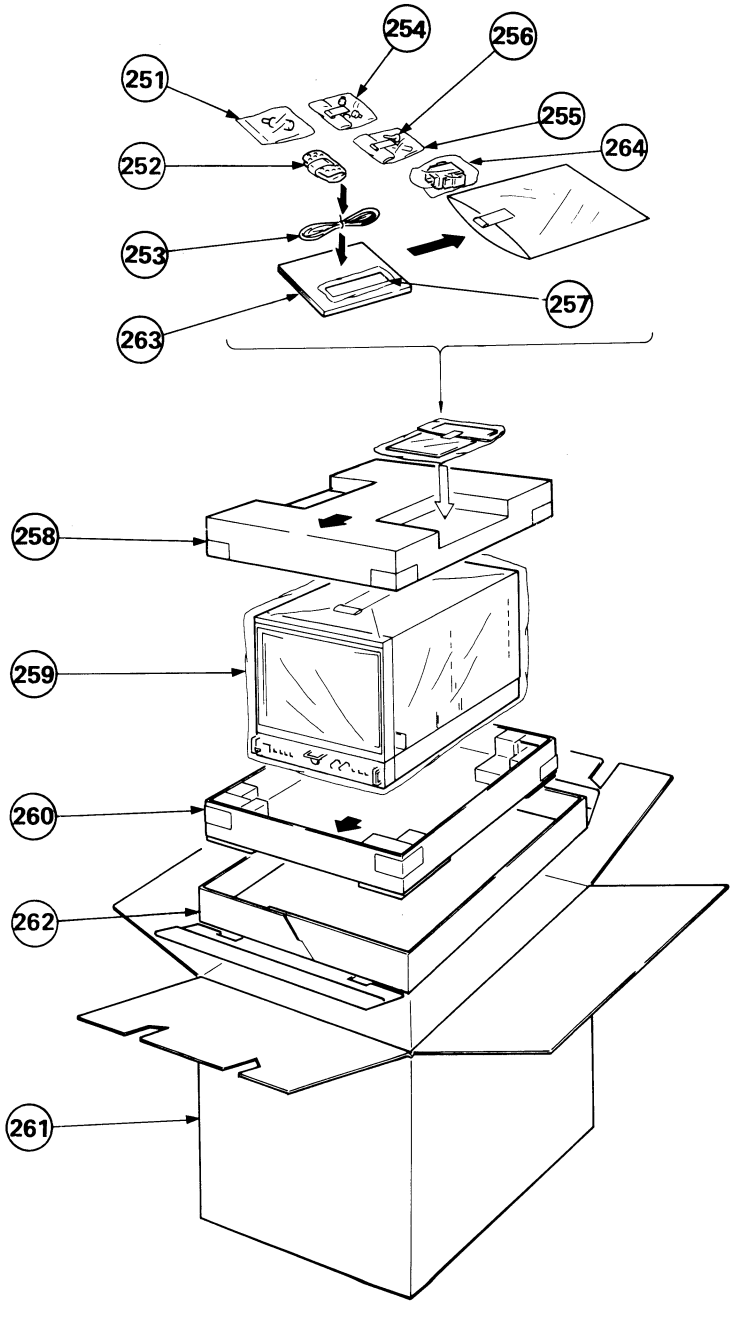


The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

REF. NO.	PART NO.	DESCRIPTION	REMARK
201	*A-1240-945-A	F BOARD, COMPLETE	
202	*3-703-141-00	HOLDER, PCB	
203	⚠1-570-173-22	SWITCH, VOLTAGE CHANGE	
204	*4-379-409-01	NUT, PLATE	
205	*4-371-879-02	COVER, AC SELECT	
206	1-533-224-11	HOLDER, FUSE (DIA. 5.2)	
207	⚠1-532-350-11	FUSE, TIME-LAG 4A/250V (HDM-1730E ONLY)	
	⚠1-532-748-11	FUSE, GLASS TUBE 6.3A/125V (HDM-1730 ONLY)	
208	*4-393-031-01	COVER, FUSE HOLDER	
209	⚠1-560-222-11	INLET 3P	
210	4-601-466-11	COVER, INLET 3P	
211	*2-990-241-01	HOLDER (A), PLUG	

6-6. ACCESSORIES AND PACKING MATERIALS



REF. NO.	PART NO.	DESCRIPTION	REMARK
251	1-560-776-00	SOCKET, CONNECTOR 10P	
252	⚠1-532-350-11	FUSE, TIME-LAG 4A/250V (HDM-1730E ONLY)	
252	⚠1-532-748-11	FUSE, GLASS TUBE 6.3A/125V (HDM-1730 ONLY)	
253	⚠1-534-819-14	POWER CORD (HDM-1730E ONLY)	
253	⚠1-551-812-11	POWER CORD (HDM-1730 ONLY)	
254	1-564-662-11	PLUG, BNC (75 OHM)	
255	7-700-731-03	DRIVER, VR ADJUSTMENT	
256	4-378-901-01	KEY	
257	4-353-737-00	PLATE, NUMBER, TALLY	
258	*4-378-994-01	CUSHION (UPPER)	
259	*4-381-155-01	BAG, PROTECTION	
260	*4-378-993-01	CUSHION (LOWER)	
261	*4-393-080-01	INDIVIDUAL CARTON (HDM-1730E ONLY)	
		INDIVIDUAL CARTON (HDM-1730 ONLY)	
262	*X-4363-303-0	BOARD ASSY, BOTTOM	
263	4-393-071-01	MANUAL, OPERATION & MAINTENANCE	
264	*2-990-242-01	HOLDER (B), PLUG	

SECTION 7
ELECTRICAL PARTS LIST

BN **BA**

NOTE:

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS
- All resistors are in ohms
- F : nonflammable

When indicating parts by reference number, please include the board name.

CAPACITORS
- MF : μF, PF : μμF

COILS
- MMH : mH, UH : μH

- The components identified by ⊠ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

REF. NO.	PART NO.	DESCRIPTION	REMARK
	*1-626-497-11	BN BOARD	
		********	
	1-507-751-00	JACK, PIN 1P	
	4-378-915-01	NUT (M2.6), PLATE	
		<CONNECTOR>	
BN1	*1-562-768-11	RECEPTACLE, MULTI CONNECTOR 64P	
BN2	*1-562-768-11	RECEPTACLE, MULTI CONNECTOR 64P	
BN3	*1-562-768-11	RECEPTACLE, MULTI CONNECTOR 64P	
BN4	*1-562-768-11	RECEPTACLE, MULTI CONNECTOR 64P	
BN5	*1-562-768-11	RECEPTACLE, MULTI CONNECTOR 64P	
BN6	*1-562-768-11	RECEPTACLE, MULTI CONNECTOR 64P	
BN7	*1-562-768-11	RECEPTACLE, MULTI CONNECTOR 64P	
BN8	*1-566-045-11	PIN, CONNECTOR 6P	
BN9	*1-566-046-11	PIN, CONNECTOR 7P	
BN10	*1-566-047-11	PIN, CONNECTOR 8P	
BN11	*1-566-054-11	PIN, CONNECTOR 2P	
BN12	*1-566-057-11	PIN, CONNECTOR 5P	
BN13	*1-566-060-11	PIN, CONNECTOR 8P	
BN14	*1-566-056-11	PIN, CONNECTOR 4P	
BN15	*1-566-058-11	PIN, CONNECTOR 6P	
BN16	*1-566-062-11	PIN, CONNECTOR 10P	
BN17	*1-566-054-11	PIN, CONNECTOR 2P	
BN18	*1-566-055-11	PIN, CONNECTOR 3P	
BN19	*1-566-047-11	PIN, CONNECTOR 8P	
BN20	*1-566-047-11	PIN, CONNECTOR 8P	
BN21	*1-566-058-11	PIN, CONNECTOR 6P	
BN23	*1-566-055-11	PIN, CONNECTOR 3P	
BN24	*1-566-056-11	PIN, CONNECTOR 4P	
BN25	*1-566-054-11	PIN, CONNECTOR 2P	
**********			
	*A-1135-524-A	BA BOARD, COMPLETE	
		**********	
	*4-353-708-00	HOOK, FINGER	
		<CONNECTOR>	
BA1	*1-562-729-11	CONNECTOR, MULTI 64P	
	4-378-915-01	NUT (M2.6), PLATE;BA1	
BA2	*1-562-454-11	CONNECTOR 15P	
BA3	*1-562-454-11	CONNECTOR 15P	
BA4	*1-562-455-11	CONNECTOR 22P	
		<CAPACITOR>	
C101	1-126-233-11	ELECT 22MF 20% 25V	
C102	1-101-004-00	CERAMIC 0.01MF 50V	
C103	1-101-004-00	CERAMIC 0.01MF 50V	
C104	1-126-233-11	ELECT 22MF 20% 25V	
C105	1-101-004-00	CERAMIC 0.01MF 50V	
C106	1-126-233-11	ELECT 22MF 20% 25V	
C107	1-101-004-00	CERAMIC 0.01MF 50V	
C108	1-101-004-00	CERAMIC 0.01MF 50V	
C109	1-126-233-11	ELECT 22MF 20% 25V	
C110	1-126-233-11	ELECT 22MF 20% 25V	
C111	1-101-004-00	CERAMIC 0.01MF 50V	
C114	1-101-004-00	CERAMIC 0.01MF 50V	
C115	1-126-233-11	ELECT 22MF 20% 25V	
C116	1-101-004-00	CERAMIC 0.01MF 50V	
C117	1-101-004-00	CERAMIC 0.01MF 50V	
C120	1-101-004-00	CERAMIC 0.01MF 50V	
C121	1-126-233-11	ELECT 22MF 20% 25V	
C122	1-126-233-11	ELECT 22MF 20% 25V	
C123	1-101-004-00	CERAMIC 0.01MF 50V	
C124	1-101-004-00	CERAMIC 0.01MF 50V	
C125	1-126-233-11	ELECT 22MF 20% 25V	
C126	1-101-004-00	CERAMIC 0.01MF 50V	
C128	1-126-233-11	ELECT 22MF 20% 25V	
C201	1-124-282-00	ELECT 22MF 20% 16V	
C203	1-124-631-11	ELECT 47MF 20% 16V	
C205	1-126-233-11	ELECT 22MF 20% 25V	
C207	1-126-233-11	ELECT 22MF 20% 25V	
C208	1-126-233-11	ELECT 22MF 20% 25V	
C209	1-126-233-11	ELECT 22MF 20% 25V	
C210	1-126-233-11	ELECT 22MF 20% 25V	
C211	1-126-233-11	ELECT 22MF 20% 25V	
C212	1-101-004-00	CERAMIC 0.01MF 50V	
C213	1-101-004-00	CERAMIC 0.01MF 50V	
C214	1-126-233-11	ELECT 22MF 20% 25V	
C215	1-101-004-00	CERAMIC 0.01MF 50V	
C217	1-126-233-11	ELECT 22MF 20% 25V	
C219	1-126-233-11	ELECT 22MF 20% 25V	
C220	1-126-233-11	ELECT 22MF 20% 25V	
C221	1-101-004-00	CERAMIC 0.01MF 50V	
C222	1-101-004-00	CERAMIC 0.01MF 50V	
C223	1-126-233-11	ELECT 22MF 20% 25V	
C224	1-124-631-11	ELECT 47MF 20% 16V	
C301	1-101-004-00	CERAMIC 0.01MF 50V	
C302	1-126-233-11	ELECT 22MF 20% 25V	
C303	1-101-004-00	CERAMIC 0.01MF 50V	
C304	1-126-233-11	ELECT 22MF 20% 25V	
C305	1-124-791-11	ELECT 1MF 20% 50V	
C306	1-126-233-11	ELECT 22MF 20% 25V	
C307	1-126-233-11	ELECT 22MF 20% 25V	
C308	1-101-004-00	CERAMIC 0.01MF 50V	

BA

REF. NO.	PART NO.	DESCRIPTION			REMARK
C309	1-101-004-00	CERAMIC	0.01MF	50V	
C310	1-126-101-11	ELECT	100MF	20% 16V	
C311	1-126-101-11	ELECT	100MF	20% 16V	
C312	1-126-233-11	ELECT	22MF	20% 25V	
C313	1-126-233-11	ELECT	22MF	20% 25V	
C314	1-101-004-00	CERAMIC	0.01MF	50V	
C315	1-101-004-00	CERAMIC	0.01MF	50V	
C316	1-124-120-11	ELECT	220MF	20% 25V	
C317	1-124-120-11	ELECT	220MF	20% 25V	
C318	1-124-477-11	ELECT	47MF	20% 25V	
C319	1-124-477-11	ELECT	47MF	20% 25V	
C320	1-101-004-00	CERAMIC	0.01MF	50V	
C321	1-126-233-11	ELECT	22MF	20% 25V	
C322	1-101-004-00	CERAMIC	0.01MF	50V	
C323	1-126-233-11	ELECT	22MF	20% 25V	
C324	1-124-791-11	ELECT	1MF	20% 50V	
C325	1-126-233-11	ELECT	22MF	20% 25V	
C326	1-126-233-11	ELECT	22MF	20% 25V	
C327	1-101-004-00	CERAMIC	0.01MF	50V	
C328	1-126-233-11	ELECT	22MF	20% 25V	
C329	1-101-004-00	CERAMIC	0.01MF	50V	
C330	1-126-233-11	ELECT	22MF	20% 25V	
C331	1-124-791-11	ELECT	1MF	20% 50V	
C332	1-126-233-11	ELECT	22MF	20% 25V	
C333	1-126-233-11	ELECT	22MF	20% 25V	
C334	1-124-791-11	ELECT	1MF	20% 50V	
C335	1-124-791-11	ELECT	1MF	20% 50V	
C336	1-124-791-11	ELECT	1MF	20% 50V	
C337	1-124-791-11	ELECT	1MF	20% 50V	
C338	1-124-791-11	ELECT	1MF	20% 50V	
C339	1-124-791-11	ELECT	1MF	20% 50V	
C340	1-101-004-00	CERAMIC	0.01MF	50V	

<DIODE>

D101	8-719-110-41	DIODE RD15ES-B2
D200	8-719-110-36	DIODE RD13ES-B2
D201	8-719-911-19	DIODE 1SS119
D203	8-719-911-19	DIODE 1SS119
D205	8-719-110-41	DIODE RD15ES-B2
D207	8-719-911-19	DIODE 1SS119
D208	8-719-911-19	DIODE 1SS119
D209	8-719-911-19	DIODE 1SS119
D210	8-719-911-19	DIODE 1SS119
D211	8-719-911-19	DIODE 1SS119
D212	8-719-911-19	DIODE 1SS119
D213	8-719-911-19	DIODE 1SS119
D214	8-719-911-19	DIODE 1SS119
D215	8-719-911-19	DIODE 1SS119
D216	8-719-911-19	DIODE 1SS119
D301	8-719-901-95	DIODE V19CSS
D302	8-719-901-95	DIODE V19CSS
D305	8-719-911-19	DIODE 1SS119
D306	8-719-911-19	DIODE 1SS119
D307	8-719-911-19	DIODE 1SS119
D308	8-719-911-19	DIODE 1SS119

<IC>

IC101	8-759-800-81	IC LA7016
IC102	8-759-800-81	IC LA7016
IC103	8-759-800-81	IC LA7016
IC202	8-759-800-81	IC LA7016
IC203	8-759-250-24	IC TC5024BP
IC204	8-759-250-25	IC TC5025BP
IC301	8-759-400-29	IC AN78L04
IC303	8-759-982-46	IC RC79L08A
IC305	8-759-602-66	IC M5230L-A
IC306	8-759-602-66	IC M5230L-A
IC307	8-759-602-66	IC M5230L-A

<TRANSISTOR>

Q101	8-729-103-19	TRANSISTOR 2SA1206-K1
Q102	8-729-103-19	TRANSISTOR 2SA1206-K1
Q103	8-729-103-19	TRANSISTOR 2SA1206-K1
Q200	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q201	8-729-119-76	TRANSISTOR 2SA1175-HFE
Q202	8-729-119-76	TRANSISTOR 2SA1175-HFE
Q203	8-729-103-19	TRANSISTOR 2SA1206-K1
Q204	8-729-378-84	TRANSISTOR 2SD788-5
Q301	8-729-378-84	TRANSISTOR 2SD788-5
Q302	8-729-600-82	TRANSISTOR 2SA1282-F
Q303	8-729-378-84	TRANSISTOR 2SD788-5
Q304	8-729-600-82	TRANSISTOR 2SA1282-F
Q305	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q306	8-729-378-84	TRANSISTOR 2SD788-5
Q307	8-729-600-82	TRANSISTOR 2SA1282-F

<RESISTOR>

R100	1-249-405-11	CARBON	100	5%	1/4W
R101	1-249-437-11	CARBON	47K	5%	1/4W
R102	1-249-437-11	CARBON	47K	5%	1/4W
R103	1-249-437-11	CARBON	47K	5%	1/4W
R104	1-249-405-11	CARBON	100	5%	1/4W
R105	1-249-405-11	CARBON	100	5%	1/4W
R106	1-249-405-11	CARBON	100	5%	1/4W
R107	1-249-405-11	CARBON	100	5%	1/4W
R108	1-249-421-11	CARBON	2.2K	5%	1/4W
R109	1-215-393-00	METAL	68	1%	1/6W
R110	1-249-405-11	CARBON	100	5%	1/4W
R111	1-249-405-11	CARBON	100	5%	1/4W
R112	1-249-405-11	CARBON	100	5%	1/4W
R113	1-249-405-11	CARBON	100	5%	1/4W
R114	1-249-405-11	CARBON	100	5%	1/4W
R115	1-249-421-11	CARBON	2.2K	5%	1/4W
R116	1-249-405-11	CARBON	100	5%	1/4W
R117	1-249-405-11	CARBON	100	5%	1/4W
R118	1-215-393-00	METAL	68	1%	1/6W
R119	1-249-437-11	CARBON	47K	5%	1/4W
R120	1-249-437-11	CARBON	47K	5%	1/4W
R121	1-249-437-11	CARBON	47K	5%	1/4W
R122	1-249-405-11	CARBON	100	5%	1/4W
R123	1-249-405-11	CARBON	100	5%	1/4W
R124	1-249-435-11	CARBON	33K	5%	1/4W
R125	1-249-405-11	CARBON	100	5%	1/4W
R126	1-249-427-11	CARBON	6.8K	5%	1/4W
R127	1-249-405-11	CARBON	100	5%	1/4W
R128	1-249-421-11	CARBON	2.2K	5%	1/4W
R129	1-215-393-00	METAL	68	1%	1/6W
R130	1-249-405-11	CARBON	100	5%	1/4W
R201	1-249-437-11	CARBON	47K	5%	1/4W
R203	1-249-465-11	CARBON	47K	5%	1/4W
R205	1-249-465-11	CARBON	47K	5%	1/4W
R207	1-247-901-11	CARBON	820K	5%	1/4W
R209	1-247-901-11	CARBON	820K	5%	1/4W
R211	1-249-405-11	CARBON	100	5%	1/4W
R213	1-249-405-11	CARBON	100	5%	1/4W
R215	1-249-405-11	CARBON	100	5%	1/4W
R219	1-249-405-11	CARBON	100	5%	1/4W

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

BA P F

REF. NO.	PART NO.	DESCRIPTION				REMARK
R220	1-249-405-11	CARBON	100	5%	1/4W	
R222	1-249-421-11	CARBON	2.2K	5%	1/4W	
R223	1-249-405-11	CARBON	100	5%	1/4W	
R224	1-249-405-11	CARBON	100	5%	1/4W	
R225	1-249-405-11	CARBON	100	5%	1/4W	
R226	1-249-421-11	CARBON	2.2K	5%	1/4W	
R227	1-215-393-00	METAL	68	1%	1/6W	
R228	1-215-393-00	METAL	68	1%	1/6W	
R229	1-249-405-11	CARBON	100	5%	1/4W	
R230	1-249-417-11	CARBON	1K	5%	1/4W	
R231	1-249-427-11	CARBON	6.8K	5%	1/4W	
R232	1-249-405-11	CARBON	100	5%	1/4W	
R233	1-249-435-11	CARBON	33K	5%	1/4W	
R234	1-249-421-11	CARBON	2.2K	5%	1/4W	
R235	1-249-417-11	CARBON	1K	5%	1/4W	
R236	1-215-393-00	METAL	68	1%	1/6W	
R237	1-249-405-11	CARBON	100	5%	1/4W	
R238	1-249-437-11	CARBON	47K	5%	1/4W	
R239	1-249-437-11	CARBON	47K	5%	1/4W	
R240	1-249-437-11	CARBON	47K	5%	1/4W	
R241	1-249-437-11	CARBON	47K	5%	1/4W	
R242	1-249-437-11	CARBON	47K	5%	1/4W	
R243	1-249-427-11	CARBON	6.8K	5%	1/4W	
R244	1-249-427-11	CARBON	6.8K	5%	1/4W	
R245	1-249-427-11	CARBON	6.8K	5%	1/4W	
R246	1-249-427-11	CARBON	6.8K	5%	1/4W	
R247	1-249-427-11	CARBON	6.8K	5%	1/4W	
R248	1-249-427-11	CARBON	6.8K	5%	1/4W	
R249	1-249-405-11	CARBON	100	5%	1/4W	
R250	1-249-405-11	CARBON	100	5%	1/4W	
R251	1-249-427-11	CARBON	6.8K	5%	1/4W	
R252	1-249-427-11	CARBON	6.8K	5%	1/4W	
R253	1-249-427-11	CARBON	6.8K	5%	1/4W	
R254	1-249-427-11	CARBON	6.8K	5%	1/4W	
R255	1-249-437-11	CARBON	47K	5%	1/4W	
R256	1-249-437-11	CARBON	47K	5%	1/4W	
R257	1-249-437-11	CARBON	47K	5%	1/4W	
R258	1-249-437-11	CARBON	47K	5%	1/4W	
R259	1-249-393-11	CARBON	10	5%	1/4W	
R260	1-249-405-11	CARBON	100	5%	1/4W	
R261	1-247-901-11	CARBON	820K	5%	1/4W	
R263	1-249-441-11	CARBON	100K	5%	1/4W	
R301	1-215-447-00	METAL	12K	1%	1/6W	
R302	1-215-442-00	METAL	7.5K	1%	1/6W	
R303	1-215-427-00	METAL	1.8K	1%	1/6W	
R304	1-215-447-00	METAL	12K	1%	1/6W	
R305	1-247-903-00	CARBON	1M	5%	1/4W	
R306	1-215-447-00	METAL	12K	1%	1/6W	
R307	1-215-447-00	METAL	12K	1%	1/6W	
R308	1-215-442-00	METAL	7.5K	1%	1/6W	
R309	1-215-427-00	METAL	1.8K	1%	1/6W	
R310	1-247-903-00	CARBON	1M	5%	1/4W	
R311	1-249-441-11	CARBON	100K	5%	1/4W	
R312	1-215-447-00	METAL	12K	1%	1/6W	
R313	1-215-442-00	METAL	7.5K	1%	1/6W	
R314	1-215-427-00	METAL	1.8K	1%	1/6W	
R315	1-215-447-00	METAL	12K	1%	1/6W	
R316	1-247-903-00	CARBON	1M	5%	1/4W	
R317	1-249-429-11	CARBON	10K	5%	1/4W	
R318	1-249-405-11	CARBON	100	5%	1/4W	

<SWITCH>

S1	*1-561-724-00	SOCKET, CONNECTOR 2P	
S1	*1-564-431-11	POST, CONNECTOR 3P	

****

REF. NO.	PART NO.	DESCRIPTION				REMARK
	*1-617-480-11	P BOARD				
		*******				
		<CONNECTOR>				
P1	*1-508-768-00	PIN, CONNECTOR (5MM PITCH) 6P				
		**********				
	*A-1240-945-A	F BOARD, COMPLETE				
		**********				
	*1-506-348-99	PIN, CONNECTOR 3P				
	*1-506-371-00	PIN, CONNECTOR 2P				
	*1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P				
	*1-508-767-00	PIN, CONNECTOR (5MM PITCH) 5P				
	*1-508-784-00	PIN, CONNECTOR (5MM PITCH) 1P				
	*1-566-057-11	PIN, CONNECTOR 5P				
		<CAPACITOR>				
C1	⚠1-130-712-11	FILM	0.47MF	20%	250V	
C2	⚠1-161-742-51	CERAMIC	0.0022MF	20%	400V	
C3	⚠1-161-742-51	CERAMIC	0.0022MF	20%	400V	
C4	⚠1-161-742-51	CERAMIC	0.0022MF	20%	400V	
C5	⚠1-161-742-51	CERAMIC	0.0022MF	20%	400V	
C6	⚠1-130-711-11	FILM	0.22MF	20%	250V	
C7	⚠1-161-953-51	CERAMIC	0.0047MF	20%	400V	
C8	⚠1-161-953-51	CERAMIC	0.0047MF	20%	400V	
C9	⚠1-161-953-51	CERAMIC	0.0047MF	20%	400V	
C10	⚠1-161-953-51	CERAMIC	0.0047MF	20%	400V	
C11	1-125-538-11	ELECT(BLOCK)	1000MF	20%	200V	
C12	1-125-538-11	ELECT(BLOCK)	1000MF	20%	200V	
C13	1-106-371-00	MYLAR	0.015MF	10%	200V	
C14	1-123-379-00	ELECT	0.47MF	20%	50V	
C15	1-130-479-00	MYLAR	0.0047MF	5%	50V	
C16	1-123-381-00	ELECT	2.2MF	20%	50V	
C17	1-136-201-11	FILM	0.22MF	10%	400V	
C18	1-101-001-00	CERAMIC	0.001MF		50V	
C19	1-123-333-00	ELECT	100MF	20%	25V	
		<DIODE>				
D1	8-719-003-08	THYRISTOR CR3CM-8				
D2	⚠8-719-300-07	DIODE RB406N				
D3	8-719-971-20	DIODE ERC38-06				
D4	8-719-971-20	DIODE ERC38-06				
D5	8-719-815-85	DIODE 1S1585				
D6	8-719-815-85	DIODE 1S1585				
D7	8-719-815-85	DIODE 1S1585				
D8	8-719-109-85	DIODE RD5.1ES-B2				
D9	8-719-971-20	DIODE ERC38-06				
D10	8-719-110-12	DIODE RD9.1ES-B1				
		<IC>				
IC1	8-719-902-56	DIODE PC817				
		<NEON LAMP>				
NL1	1-519-331-11	LAMP, NEON 3P				
		<IC LINK>				
PS1	1-532-605-00	LINK, IC				

F FA QC

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTION				REMARK
		<TRANSISTOR>				
Q1	8-729-175-22	TRANSISTOR 2SC2752-L				
Q2	8-729-105-97	TRANSISTOR 2SA1156-2K				
		<RESISTOR>				
R1	⚠1-202-730-91	SOLID	8.2M	10%	1/2W	
R2	⚠1-202-845-91	SOLID	390K	10%	1/2W	
R3	⚠1-217-295-11	WIREWOUND	5.6	10%	5W	F
R4	1-249-437-11	CARBON	47K	5%	1/4W	
R5	1-249-492-11	CARBON	47K	5%	1/2W	
R6	1-249-437-11	CARBON	47K	5%	1/4W	
R7	1-217-337-00	WIREWOUND	22	10%	7W	F
R8	1-249-421-11	CARBON	2.2K	5%	1/4W	
R9	1-249-417-11	CARBON	1K	5%	1/4W	
R10	1-217-337-00	WIREWOUND	22	10%	7W	F
R11	1-249-403-11	CARBON	68	5%	1/4W	F
R12	1-249-409-11	CARBON	220	5%	1/4W	F
R13	1-249-409-11	CARBON	220	5%	1/4W	F
R14	1-249-425-11	CARBON	4.7K	5%	1/4W	
R15	1-249-405-11	CARBON	100	5%	1/4W	
R16	1-247-903-00	CARBON	1M	5%	1/4W	
R17	1-247-903-00	CARBON	1M	5%	1/4W	
R18	1-247-903-00	CARBON	1M	5%	1/4W	
		<RELAY>				
RY1	⚠1-515-579-11	RELAY				
		<TRANSFORMER>				
T1	⚠1-421-590-11	TRANSFORMER, LINE FILTER				
T2	⚠1-421-590-11	TRANSFORMER, LINE FILTER				
T3	⚠1-447-426-12	TRANSFORMER, CONVERTER				
		<THERMISTOR>				
TH1	⚠1-800-416-11	THERMISTOR				
THP1	⚠1-800-686-33	THERMISTOR (POSITIVE)				
THP2	⚠1-806-387-12	THERMISTOR (POSITIVE)				
**********						
	*1-632-126-11	FA BOARD				
		********				
		<CONNECTOR>				
FA1	*1-566-059-11	PIN, CONNECTOR 7P				
FA2	*1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P				
FA3	*1-566-059-11	PIN, CONNECTOR 7P				
FA4	*1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P				
FA5	*1-566-059-11	PIN, CONNECTOR 7P				
FA6	*1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P				
FA7	*1-566-059-11	PIN, CONNECTOR 7P				
FA8	*1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P				
**********						
	*A-1275-069-A	QC BOARD, COMPLETE				
		**********				
	1-536-992-11	TERMINAL BOARD, INPUT/OUTPUT				
		<CAPACITOR>				
C101	1-161-021-11	CERAMIC	0.047MF	10%	25V	
C102	1-124-631-11	ELECT	47MF	20%	16V	
C103	1-101-004-00	CERAMIC	0.01MF		50V	
C104	1-123-332-00	ELECT	47MF	20%	16V	
C106	1-102-934-00	CERAMIC	1PF	0.25PF	50V	
C107	1-102-934-00	CERAMIC	1PF	0.25PF	50V	
C108	1-124-631-11	ELECT	47MF	20%	16V	
C109	1-101-004-00	CERAMIC	0.01MF		50V	
C110	1-161-021-11	CERAMIC	0.047MF	10%	25V	
C111	1-124-631-11	ELECT	47MF	20%	16V	
C112	1-101-004-00	CERAMIC	0.01MF		50V	
C113	1-161-021-11	CERAMIC	0.047MF	10%	25V	
C130	1-101-004-00	CERAMIC	0.01MF		50V	
C131	1-124-963-11	ELECT	33MF	20%	16V	
C132	1-101-004-00	CERAMIC	0.01MF		50V	
C133	1-124-963-11	ELECT	33MF	20%	16V	
C134	1-101-004-00	CERAMIC	0.01MF		50V	
C135	1-124-963-11	ELECT	33MF	20%	16V	
C136	1-101-004-00	CERAMIC	0.01MF		50V	
C137	1-124-963-11	ELECT	33MF	20%	16V	
C138	1-101-004-00	CERAMIC	0.01MF		50V	
C139	1-124-963-11	ELECT	33MF	20%	16V	
C140	1-101-004-00	CERAMIC	0.01MF		50V	
C141	1-124-963-11	ELECT	33MF	20%	16V	
C142	1-101-004-00	CERAMIC	0.01MF		50V	
C143	1-101-004-00	CERAMIC	0.01MF		50V	
C144	1-101-004-00	CERAMIC	0.01MF		50V	
C145	1-101-004-00	CERAMIC	0.01MF		50V	
C146	1-101-004-00	CERAMIC	0.01MF		50V	
		<TRIMMER>				
CV101	1-141-179-12	CAP, TRIMMER				
		<TRANSISTOR>				
Q101	8-729-105-88	TRANSISTOR 2SC2570A				
Q102	8-729-105-88	TRANSISTOR 2SC2570A				
Q103	8-729-103-19	TRANSISTOR 2SA1206-K1				
Q104	8-729-105-88	TRANSISTOR 2SC2570A				
Q105	8-729-105-88	TRANSISTOR 2SC2570A				
Q106	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q107	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q108	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q109	8-729-119-78	TRANSISTOR 2SC2785-HFE				
		<CONNECTOR>				
QC1	*1-564-465-11	CONNECTOR (LIGHT ANGLE) 22P				
QC2	*1-566-058-11	PIN, CONNECTOR 6P				
		<RESISTOR>				
R101	1-249-417-11	CARBON	1K	5%	1/4W	
R102	1-249-417-11	CARBON	1K	5%	1/4W	
R103	1-215-440-00	METAL	6.2K	1%	1/6W	
R104	1-215-447-00	METAL	12K	1%	1/6W	
R105	1-215-445-00	METAL	10K	1%	1/6W	
R106	1-215-448-00	METAL	13K	1%	1/6W	
R107	1-215-429-00	METAL	2.2K	1%	1/6W	
R108	1-215-421-00	METAL	1K	1%	1/6W	
R109	1-215-437-00	METAL	4.7K	1%	1/6W	
R110	1-215-397-00	METAL	100	1%	1/6W	
R111	1-249-405-11	CARBON	100	5%	1/4W	
R112	1-249-420-11	CARBON	1.8K	5%	1/4W	
R113	1-215-421-00	METAL	1K	1%	1/6W	
R114	1-214-702-00	METAL	75	1%	1/4W	
R115	1-249-417-11	CARBON	1K	5%	1/4W	

REF. NO.	PART NO.	DESCRIPTION				REMARK
R116	1-249-405-11	CARBON	100	5%	1/4W	
R117	1-249-431-11	CARBON	15K	5%	1/4W	
R118	1-249-427-11	CARBON	6.8K	5%	1/4W	
R119	1-249-439-11	CARBON	68K	5%	1/4W	
R121	1-249-425-11	CARBON	4.7K	5%	1/4W	
R122	1-214-702-00	METAL	75	1%	1/4W	
R123	1-249-417-11	CARBON	1K	5%	1/4W	
R124	1-249-405-11	CARBON	100	5%	1/4W	
R125	1-249-427-11	CARBON	6.8K	5%	1/4W	
R126	1-249-431-11	CARBON	15K	5%	1/4W	
R127	1-249-439-11	CARBON	68K	5%	1/4W	
R128	1-249-405-11	CARBON	100	5%	1/4W	
R129	1-249-425-11	CARBON	4.7K	5%	1/4W	
R131	1-247-104-00	CARBON	75	5%	1/4W	
R132	1-247-104-00	CARBON	75	5%	1/4W	
R133	1-247-804-11	CARBON	75	5%	1/4W	
R134	1-249-421-11	CARBON	2.2K	5%	1/4W	
R135	1-249-421-11	CARBON	2.2K	5%	1/4W	
R136	1-249-421-11	CARBON	2.2K	5%	1/4W	
R137	1-249-421-11	CARBON	2.2K	5%	1/4W	
R138	1-249-421-11	CARBON	2.2K	5%	1/4W	
R140	1-249-405-11	CARBON	100	5%	1/4W	

<VARIABLE RESISTOR>

RV101	1-237-516-21	RES, ADJ, CERMET 2K	

****

	*1-617-479-11	QD BOARD	
		********	

<CONNECTOR>

QD2	1-563-265-11	CONNECTOR, MULTIPLE 10P	

****

	*A-1275-089-A	QA BOARD, COMPLETE	
		**********	
	1-537-174-11	TERMINAL BOARD, INPUT/OUTPUT	

<CAPACITOR>

C101	1-161-021-11	CERAMIC	0.047MF	10%	25V
C102	1-124-631-11	ELECT	47MF	20%	16V
C103	1-101-004-00	CERAMIC	0.01MF		50V
C104	1-123-332-00	ELECT	47MF	20%	16V
C105	1-102-934-00	CERAMIC	1PF	0.25PF	50V
C106	1-102-934-00	CERAMIC	1PF	0.25PF	50V
C107	1-161-021-11	CERAMIC	0.047MF	10%	25V
C108	1-124-631-11	ELECT	47MF	20%	16V
C109	1-101-004-00	CERAMIC	0.01MF		50V
C110	1-123-332-00	ELECT	47MF	20%	16V
C111	1-102-934-00	CERAMIC	1PF	0.25PF	50V
C112	1-102-934-00	CERAMIC	1PF	0.25PF	50V
C113	1-161-021-11	CERAMIC	0.047MF	10%	25V
C114	1-124-631-11	ELECT	47MF	20%	16V
C115	1-101-004-00	CERAMIC	0.01MF		50V
C116	1-123-332-00	ELECT	47MF	20%	16V
C117	1-102-934-00	CERAMIC	1PF	0.25PF	50V
C118	1-102-934-00	CERAMIC	1PF	0.25PF	50V
C128	1-124-963-11	ELECT	33MF	20%	16V
C129	1-101-004-00	CERAMIC	0.01MF		50V
C130	1-101-004-00	CERAMIC	0.01MF		50V
C131	1-124-963-11	ELECT	33MF	20%	16V
C132	1-124-963-11	ELECT	33MF	20%	16V
C133	1-101-004-00	CERAMIC	0.01MF		50V
C134	1-101-004-00	CERAMIC	0.01MF		50V
C135	1-124-963-11	ELECT	33MF	20%	16V
C136	1-124-963-11	ELECT	33MF	20%	16V
C137	1-101-004-00	CERAMIC	0.01MF		50V
C138	1-101-004-00	CERAMIC	0.01MF		50V
C139	1-124-963-11	ELECT	33MF	20%	16V

<TRIMMER>

CV101	1-141-179-12	CAP, TRIMMER
CV102	1-141-179-12	CAP, TRIMMER
CV103	1-141-179-12	CAP, TRIMMER

<TRANSISTOR>

Q101	8-729-105-88	TRANSISTOR 2SC2570A
Q102	8-729-105-88	TRANSISTOR 2SC2570A
Q103	8-729-103-19	TRANSISTOR 2SA1206-K1
Q104	8-729-105-88	TRANSISTOR 2SC2570A
Q105	8-729-105-88	TRANSISTOR 2SC2570A
Q106	8-729-105-88	TRANSISTOR 2SC2570A
Q107	8-729-105-88	TRANSISTOR 2SC2570A
Q108	8-729-103-19	TRANSISTOR 2SA1206-K1
Q109	8-729-105-88	TRANSISTOR 2SC2570A
Q110	8-729-105-88	TRANSISTOR 2SC2570A
Q111	8-729-105-88	TRANSISTOR 2SC2570A
Q112	8-729-105-88	TRANSISTOR 2SC2570A
Q113	8-729-103-19	TRANSISTOR 2SA1206-K1
Q114	8-729-105-88	TRANSISTOR 2SC2570A
Q115	8-729-105-88	TRANSISTOR 2SC2570A

<CONNECTOR>

QA1	*1-564-464-11	CONNECTOR (LIGHT ANGLE) 15P

<RESISTOR>

R101	1-249-417-11	CARBON	1K	5%	1/4W
R102	1-249-417-11	CARBON	1K	5%	1/4W
R103	1-215-440-00	METAL	6.2K	1%	1/6W
R104	1-215-447-00	METAL	12K	1%	1/6W
R105	1-215-445-00	METAL	10K	1%	1/6W
R106	1-215-448-00	METAL	13K	1%	1/6W
R107	1-215-429-00	METAL	2.2K	1%	1/6W
R108	1-215-421-00	METAL	1K	1%	1/6W
R109	1-215-437-00	METAL	4.7K	1%	1/6W
R110	1-249-405-11	CARBON	100	5%	1/4W
R111	1-215-397-00	METAL	100	1%	1/6W
R112	1-249-420-11	CARBON	1.8K	5%	1/4W
R113	1-215-421-00	METAL	1K	1%	1/6W
R114	1-249-417-11	CARBON	1K	5%	1/4W
R115	1-249-417-11	CARBON	1K	5%	1/4W
R116	1-215-440-00	METAL	6.2K	1%	1/6W
R117	1-215-447-00	METAL	12K	1%	1/6W
R118	1-215-445-00	METAL	10K	1%	1/6W
R119	1-215-448-00	METAL	13K	1%	1/6W
R120	1-215-429-00	METAL	2.2K	1%	1/6W
R121	1-215-421-00	METAL	1K	1%	1/6W
R122	1-215-437-00	METAL	4.7K	1%	1/6W
R123	1-249-405-11	CARBON	100	5%	1/4W
R124	1-215-397-00	METAL	100	1%	1/6W
R125	1-249-420-11	CARBON	1.8K	5%	1/4W
R126	1-215-421-00	METAL	1K	1%	1/6W
R127	1-249-417-11	CARBON	1K	5%	1/4W
R128	1-249-417-11	CARBON	1K	5%	1/4W
R129	1-215-440-00	METAL	6.2K	1%	1/6W

QA QB

REF. NO.	PART NO.	DESCRIPTION				REMARK
R130	1-215-447-00	METAL	12K	1%	1/6W	
R131	1-215-445-00	METAL	10K	1%	1/6W	
R132	1-215-448-00	METAL	13K	1%	1/6W	
R133	1-215-429-00	METAL	2.2K	1%	1/6W	
R134	1-215-421-00	METAL	1K	1%	1/6W	
R135	1-215-437-00	METAL	4.7K	1%	1/6W	
R136	1-249-405-11	CARBON	100	5%	1/4W	
R137	1-215-397-00	METAL	100	1%	1/6W	
R138	1-249-420-11	CARBON	1.8K	5%	1/4W	
R139	1-215-421-00	METAL	1K	1%	1/6W	
R140	1-249-405-11	CARBON	100	5%	1/4W	
R141	1-249-405-11	CARBON	100	5%	1/4W	
R142	1-249-405-11	CARBON	100	5%	1/4W	
R143	1-249-405-11	CARBON	100	5%	1/4W	
R144	1-249-405-11	CARBON	100	5%	1/4W	
R145	1-249-405-11	CARBON	100	5%	1/4W	
R146	1-247-804-11	CARBON	75	5%	1/4W	
R147	1-247-804-11	CARBON	75	5%	1/4W	
R148	1-247-804-11	CARBON	75	5%	1/4W	
		<VARIABLE RESISTOR>				
RV101	1-237-516-21	RES, ADJ, CERMET 2K				
RV102	1-237-516-21	RES, ADJ, CERMET 2K				
RV103	1-237-516-21	RES, ADJ, CERMET 2K				
**********						
	*A-1275-090-A	QB BOARD, COMPLETE				
		**********				
	1-537-174-21	TERMINAL BOARD, INPUT/OUTPUT				
		<CAPACITOR>				
C101	1-161-021-11	CERAMIC	0.047MF	10%	25V	
C102	1-124-631-11	ELECT	47MF	20%	16V	
C103	1-101-004-00	CERAMIC	0.01MF		50V	
C104	1-123-332-00	ELECT	47MF	20%	16V	
C105	1-102-934-00	CERAMIC	1PF	0.25PF	50V	
C106	1-102-934-00	CERAMIC	1PF	0.25PF	50V	
C107	1-161-021-11	CERAMIC	0.047MF	10%	25V	
C108	1-124-631-11	ELECT	47MF	20%	16V	
C109	1-101-004-00	CERAMIC	0.01MF		50V	
C110	1-123-332-00	ELECT	47MF	20%	16V	
C111	1-102-934-00	CERAMIC	1PF	0.25PF	50V	
C112	1-102-934-00	CERAMIC	1PF	0.25PF	50V	
C113	1-161-021-11	CERAMIC	0.047MF	10%	25V	
C114	1-124-631-11	ELECT	47MF	20%	16V	
C115	1-101-004-00	CERAMIC	0.01MF		50V	
C116	1-123-332-00	ELECT	47MF	20%	16V	
C117	1-102-934-00	CERAMIC	1PF	0.25PF	50V	
C118	1-102-934-00	CERAMIC	1PF	0.25PF	50V	
C128	1-124-963-11	ELECT	33MF	20%	16V	
C129	1-101-004-00	CERAMIC	0.01MF		50V	
C130	1-101-004-00	CERAMIC	0.01MF		50V	
C131	1-124-963-11	ELECT	33MF	20%	16V	
C132	1-124-963-11	ELECT	33MF	20%	16V	
C133	1-101-004-00	CERAMIC	0.01MF		50V	
C134	1-101-004-00	CERAMIC	0.01MF		50V	
C135	1-124-963-11	ELECT	33MF	20%	16V	
C136	1-124-963-11	ELECT	33MF	20%	16V	
C137	1-101-004-00	CERAMIC	0.01MF		50V	
C138	1-101-004-00	CERAMIC	0.01MF		50V	
C139	1-124-963-11	ELECT	33MF	20%	16V	

REF. NO.	PART NO.	DESCRIPTION				REMARK
		<TRIMMER>				
CV101	1-141-179-12	CAP, TRIMMER				
CV102	1-141-179-12	CAP, TRIMMER				
CV103	1-141-179-12	CAP, TRIMMER				
		<TRANSISTOR>				
Q101	8-729-105-88	TRANSISTOR 2SC2570A				
Q102	8-729-105-88	TRANSISTOR 2SC2570A				
Q103	8-729-103-19	TRANSISTOR 2SA1206-K1				
Q104	8-729-105-88	TRANSISTOR 2SC2570A				
Q105	8-729-105-88	TRANSISTOR 2SC2570A				
Q106	8-729-105-88	TRANSISTOR 2SC2570A				
Q107	8-729-105-88	TRANSISTOR 2SC2570A				
Q108	8-729-103-19	TRANSISTOR 2SA1206-K1				
Q109	8-729-105-88	TRANSISTOR 2SC2570A				
Q110	8-729-105-88	TRANSISTOR 2SC2570A				
Q111	8-729-105-88	TRANSISTOR 2SC2570A				
Q112	8-729-105-88	TRANSISTOR 2SC2570A				
Q113	8-729-103-19	TRANSISTOR 2SA1206-K1				
Q114	8-729-105-88	TRANSISTOR 2SC2570A				
Q115	8-729-105-88	TRANSISTOR 2SC2570A				
		<CONNECTOR>				
QB1	*1-564-464-11	CONNECTOR (LIGHT ANGLE) 15P				
		<RESISTOR>				
R101	1-249-417-11	CARBON	1K	5%	1/4W	
R102	1-249-417-11	CARBON	1K	5%	1/4W	
R103	1-215-440-00	METAL	6.2K	1%	1/6W	
R104	1-215-447-00	METAL	12K	1%	1/6W	
R105	1-215-445-00	METAL	10K	1%	1/6W	
R106	1-215-448-00	METAL	13K	1%	1/6W	
R107	1-215-429-00	METAL	2.2K	1%	1/6W	
R108	1-215-421-00	METAL	1K	1%	1/6W	
R109	1-215-437-00	METAL	4.7K	1%	1/6W	
R110	1-249-405-11	CARBON	100	5%	1/4W	
R111	1-215-397-00	METAL	100	1%	1/6W	
R112	1-249-420-11	CARBON	1.8K	5%	1/4W	
R113	1-215-421-00	METAL	1K	1%	1/6W	
R114	1-249-417-11	CARBON	1K	5%	1/4W	
R115	1-249-417-11	CARBON	1K	5%	1/4W	
R116	1-215-440-00	METAL	6.2K	1%	1/6W	
R117	1-215-447-00	METAL	12K	1%	1/6W	
R118	1-215-445-00	METAL	10K	1%	1/6W	
R119	1-215-448-00	METAL	13K	1%	1/6W	
R120	1-215-429-00	METAL	2.2K	1%	1/6W	
R121	1-215-421-00	METAL	1K	1%	1/6W	
R122	1-215-437-00	METAL	4.7K	1%	1/6W	
R123	1-249-405-11	CARBON	100	5%	1/4W	
R124	1-215-397-00	METAL	100	1%	1/6W	
R125	1-249-420-11	CARBON	1.8K	5%	1/4W	
R126	1-215-421-00	METAL	1K	1%	1/6W	
R127	1-249-417-11	CARBON	1K	5%	1/4W	
R128	1-249-417-11	CARBON	1K	5%	1/4W	
R129	1-215-440-00	METAL	6.2K	1%	1/6W	
R130	1-215-447-00	METAL	12K	1%	1/6W	
R131	1-215-445-00	METAL	10K	1%	1/6W	
R132	1-215-448-00	METAL	13K	1%	1/6W	
R133	1-215-429-00	METAL	2.2K	1%	1/6W	
R134	1-215-421-00	METAL	1K	1%	1/6W	
R135	1-215-437-00	METAL	4.7K	1%	1/6W	
R136	1-249-405-11	CARBON	100	5%	1/4W	
R137	1-215-397-00	METAL	100	1%	1/6W	

REF. NO.	PART NO.	DESCRIPTION				REMARK
R138	1-249-420-11	CARBON	1.8K	5%	1/4W	
R139	1-215-421-00	METAL	1K	1%	1/6W	
R140	1-249-405-11	CARBON	100	5%	1/4W	
R141	1-249-405-11	CARBON	100	5%	1/4W	
R142	1-249-405-11	CARBON	100	5%	1/4W	
R143	1-249-405-11	CARBON	100	5%	1/4W	
R144	1-249-405-11	CARBON	100	5%	1/4W	
R145	1-249-405-11	CARBON	100	5%	1/4W	
R146	1-247-804-11	CARBON	75	5%	1/4W	
R147	1-247-804-11	CARBON	75	5%	1/4W	
R148	1-247-804-11	CARBON	75	5%	1/4W	
		<VARIABLE RESISTOR>				
RV101	1-237-516-21	RES, ADJ, CERMET 2K				
RV102	1-237-516-21	RES, ADJ, CERMET 2K				
RV103	1-237-516-21	RES, ADJ, CERMET 2K				
**********						
	*A-1296-079-A	BD BOARD, COMPLETE				
		**********				
	*4-353-708-00	HOOK, FINGER				
	4-378-915-01	NUT (M2.6), PLATE				
		<CONNECTOR>				
BD1	*1-562-729-11	CONNECTOR, MULTI 64P				
		<CAPACITOR>				
C001	1-123-382-00	ELECT	3.3MF	20%	50V	
C002	1-123-382-00	ELECT	3.3MF	20%	50V	
C003	1-123-382-00	ELECT	3.3MF	20%	50V	
C004	1-123-382-00	ELECT	3.3MF	20%	50V	
C005	1-123-382-00	ELECT	3.3MF	20%	50V	
C006	1-123-382-00	ELECT	3.3MF	20%	50V	
C009	1-101-004-00	CERAMIC	0.01MF		50V	
C011	1-126-517-11	ELECT	220MF	20%	25V	
C012	1-124-126-00	ELECT	47MF	20%	25V	
C013	1-101-004-00	CERAMIC	0.01MF		50V	
C014	1-101-004-00	CERAMIC	0.01MF		50V	
C016	1-126-517-11	ELECT	220MF	20%	25V	
C017	1-124-126-00	ELECT	47MF	20%	25V	
C018	1-101-004-00	CERAMIC	0.01MF		50V	
C019	1-101-004-00	CERAMIC	0.01MF		50V	
C101	1-126-101-11	ELECT	100MF	20%	16V	
C102	1-101-004-00	CERAMIC	0.01MF		50V	
C103	1-126-101-11	ELECT	100MF	20%	16V	
C104	1-101-004-00	CERAMIC	0.01MF		50V	
C105	1-102-942-00	CERAMIC	5PF	1PF	50V	
C106	1-124-963-11	ELECT	33MF	20%	16V	
C107	1-136-173-00	FILM	0.47MF	5%	50V	
C108	1-136-173-00	FILM	0.47MF	5%	50V	
C109	1-101-004-00	CERAMIC	0.01MF		50V	
C110	1-123-330-00	ELECT	22MF	20%	25V	
C111	1-123-330-00	ELECT	22MF	20%	25V	
C112	1-123-330-00	ELECT	22MF	20%	25V	
C113	1-123-330-00	ELECT	22MF	20%	25V	
C114	1-124-963-11	ELECT	33MF	20%	16V	
C115	1-101-004-00	CERAMIC	0.01MF		50V	
C116	1-124-963-11	ELECT	33MF	20%	16V	
C117	1-101-004-00	CERAMIC	0.01MF		50V	
C118	1-124-963-11	ELECT	33MF	20%	16V	
C119	1-136-169-00	FILM	0.22MF	5%	50V	
C120	1-101-004-00	CERAMIC	0.01MF		50V	

REF. NO.	PART NO.	DESCRIPTION				REMARK
C121	1-123-381-00	ELECT	2.2MF	20%	50V	
C122	1-101-004-00	CERAMIC	0.01MF		50V	
C123	1-102-942-00	CERAMIC	5PF	1PF	50V	
C124	1-123-330-00	ELECT	22MF	20%	25V	
C125	1-123-330-00	ELECT	22MF	20%	25V	
C126	1-136-173-00	FILM	0.47MF	5%	50V	
C127	1-101-004-00	CERAMIC	0.01MF		50V	
C128	1-136-173-00	FILM	0.47MF	5%	50V	
C129	1-101-004-00	CERAMIC	0.01MF		50V	
C131	1-101-004-00	CERAMIC	0.01MF		50V	
C132	1-101-004-00	CERAMIC	0.01MF		50V	
C133	1-101-004-00	CERAMIC	0.01MF		50V	
C134	1-101-888-00	CERAMIC	68PF	5%	50V	
C135	1-101-004-00	CERAMIC	0.01MF		50V	
C137	1-102-951-00	CERAMIC	15PF	5%	50V	
C138	1-101-004-00	CERAMIC	0.01MF		50V	
C139	1-101-004-00	CERAMIC	0.01MF		50V	
C201	1-126-101-11	ELECT	100MF	20%	16V	
C202	1-101-004-00	CERAMIC	0.01MF		50V	
C203	1-126-101-11	ELECT	100MF	20%	16V	
C204	1-101-004-00	CERAMIC	0.01MF		50V	
C205	1-102-942-00	CERAMIC	5PF	1PF	50V	
C206	1-124-963-11	ELECT	33MF	20%	16V	
C207	1-136-173-00	FILM	0.47MF	5%	50V	
C208	1-136-173-00	FILM	0.47MF	5%	50V	
C209	1-101-004-00	CERAMIC	0.01MF		50V	
C210	1-123-330-00	ELECT	22MF	20%	25V	
C211	1-123-330-00	ELECT	22MF	20%	25V	
C212	1-123-330-00	ELECT	22MF	20%	25V	
C213	1-123-330-00	ELECT	22MF	20%	25V	
C214	1-124-963-11	ELECT	33MF	20%	16V	
C215	1-101-004-00	CERAMIC	0.01MF		50V	
C216	1-124-963-11	ELECT	33MF	20%	16V	
C217	1-101-004-00	CERAMIC	0.01MF		50V	
C218	1-124-963-11	ELECT	33MF	20%	16V	
C219	1-136-169-00	FILM	0.22MF	5%	50V	
C220	1-101-004-00	CERAMIC	0.01MF		50V	
C221	1-123-381-00	ELECT	2.2MF	20%	50V	
C222	1-101-004-00	CERAMIC	0.01MF		50V	
C223	1-102-942-00	CERAMIC	5PF	1PF	50V	
C224	1-123-330-00	ELECT	22MF	20%	25V	
C225	1-123-330-00	ELECT	22MF	20%	25V	
C226	1-136-173-00	FILM	0.47MF	5%	50V	
C227	1-101-004-00	CERAMIC	0.01MF		50V	
C228	1-136-173-00	FILM	0.47MF	5%	50V	
C229	1-101-004-00	CERAMIC	0.01MF		50V	
C231	1-101-004-00	CERAMIC	0.01MF		50V	
C232	1-101-004-00	CERAMIC	0.01MF		50V	
C233	1-101-004-00	CERAMIC	0.01MF		50V	
C234	1-101-888-00	CERAMIC	68PF	5%	50V	
C235	1-101-004-00	CERAMIC	0.01MF		50V	
C237	1-102-951-00	CERAMIC	15PF	5%	50V	
C238	1-101-004-00	CERAMIC	0.01MF		50V	
C239	1-101-004-00	CERAMIC	0.01MF		50V	
C301	1-126-101-11	ELECT	100MF	20%	16V	
C302	1-101-004-00	CERAMIC	0.01MF		50V	
C303	1-126-101-11	ELECT	100MF	20%	16V	
C304	1-101-004-00	CERAMIC	0.01MF		50V	
C305	1-102-942-00	CERAMIC	5PF	1PF	50V	
C306	1-124-963-11	ELECT	33MF	20%	16V	
C307	1-136-173-00	FILM	0.47MF	5%	50V	
C308	1-136-173-00	FILM	0.47MF	5%	50V	
C309	1-101-004-00	CERAMIC	0.01MF		50V	
C310	1-123-330-00	ELECT	22MF	20%	25V	
C311	1-123-330-00	ELECT	22MF	20%	25V	
C312	1-123-330-00	ELECT	22MF	20%	25V	

BD

REF. NO.	PART NO.	DESCRIPTION			REMARK
C313	1-123-330-00	ELECT	22MF	20% 25V	
C314	1-124-963-11	ELECT	33MF	20% 16V	
C315	1-101-004-00	CERAMIC	0.01MF	50V	
C316	1-124-963-11	ELECT	33MF	20% 16V	
C317	1-101-004-00	CERAMIC	0.01MF	50V	
C318	1-124-963-11	ELECT	33MF	20% 16V	
C319	1-136-169-00	FILM	0.22MF	5% 50V	
C320	1-101-004-00	CERAMIC	0.01MF	50V	
C321	1-123-381-00	ELECT	2.2MF	20% 50V	
C322	1-101-004-00	CERAMIC	0.01MF	50V	
C323	1-102-942-00	CERAMIC	5PF	1PF 50V	
C324	1-123-330-00	ELECT	22MF	20% 25V	
C325	1-123-330-00	ELECT	22MF	20% 25V	
C326	1-136-173-00	FILM	0.47MF	5% 50V	
C327	1-101-004-00	CERAMIC	0.01MF	50V	
C328	1-136-173-00	FILM	0.47MF	5% 50V	
C329	1-101-004-00	CERAMIC	0.01MF	50V	
C331	1-101-004-00	CERAMIC	0.01MF	50V	
C332	1-101-004-00	CERAMIC	0.01MF	50V	
C333	1-101-004-00	CERAMIC	0.01MF	50V	
C334	1-101-888-00	CERAMIC	68PF	5% 50V	
C335	1-101-004-00	CERAMIC	0.01MF	50V	
C337	1-102-951-00	CERAMIC	15PF	5% 50V	
C338	1-101-004-00	CERAMIC	0.01MF	50V	
C339	1-101-004-00	CERAMIC	0.01MF	50V	

<DIODE>

D001	8-719-911-19	DIODE 1SS119
D002	8-719-911-19	DIODE 1SS119
D007	8-719-109-72	DIODE RD3.9ES-B2
D101	8-719-110-41	DIODE RD15ES-B2
D102	8-719-911-19	DIODE 1SS119
D103	8-719-911-19	DIODE 1SS119
D104	8-719-911-19	DIODE 1SS119
D106	8-719-911-19	DIODE 1SS119
D107	8-719-109-89	DIODE RD5.6ES-B2
D108	8-719-109-89	DIODE RD5.6ES-B2
D201	8-719-110-41	DIODE RD15ES-B2
D202	8-719-911-19	DIODE 1SS119
D203	8-719-911-19	DIODE 1SS119
D204	8-719-911-19	DIODE 1SS119
D206	8-719-911-19	DIODE 1SS119
D207	8-719-109-89	DIODE RD5.6ES-B2
D208	8-719-109-89	DIODE RD5.6ES-B2
D301	8-719-110-41	DIODE RD15ES-B2
D302	8-719-911-19	DIODE 1SS119
D303	8-719-911-19	DIODE 1SS119
D304	8-719-911-19	DIODE 1SS119
D306	8-719-911-19	DIODE 1SS119
D307	8-719-109-89	DIODE RD5.6ES-B2
D308	8-719-109-89	DIODE RD5.6ES-B2

<IC>

IC001	8-759-400-29	IC AN78L04
IC002	8-759-982-46	IC RC79L08A
IC101	8-741-131-30	IC BX-1313
IC102	8-759-800-81	IC LA7016
IC103	8-741-131-50	IC BX-1315
IC104	8-769-401-89	TRANSISTOR TX-429M
IC105	8-741-131-40	IC BX-1314
IC106	8-741-131-30	IC BX-1313
IC107	8-741-131-30	IC BX-1313
IC201	8-741-131-30	IC BX-1313
IC202	8-759-800-81	IC LA7016
IC203	8-741-131-50	IC BX-1315
IC204	8-769-401-89	TRANSISTOR TX-429M
IC205	8-741-131-40	IC BX-1314
IC206	8-741-131-30	IC BX-1313
IC207	8-741-131-30	IC BX-1313
IC301	8-741-131-30	IC BX-1313
IC302	8-759-800-81	IC LA7016
IC303	8-741-131-50	IC BX-1315
IC304	8-769-401-89	TRANSISTOR TX-429M
IC305	8-741-131-40	IC BX-1314
IC306	8-741-131-30	IC BX-1313
IC307	8-741-131-30	IC BX-1313

<COIL>

L102	1-408-421-00	INDUCTOR	100UH
L103	1-408-421-00	INDUCTOR	100UH
L202	1-408-421-00	INDUCTOR	100UH
L203	1-408-421-00	INDUCTOR	100UH
L302	1-408-421-00	INDUCTOR	100UH
L303	1-408-421-00	INDUCTOR	100UH

<TRANSISTOR>

Q101	8-729-105-88	TRANSISTOR 2SC2570A
Q102	8-729-105-88	TRANSISTOR 2SC2570A
Q103	8-729-103-19	TRANSISTOR 2SA1206-K1
Q104	8-729-103-19	TRANSISTOR 2SA1206-K1
Q105	8-729-105-88	TRANSISTOR 2SC2570A
Q106	8-729-802-45	TRANSISTOR 2SK125-5
Q107	8-729-119-76	TRANSISTOR 2SA1175-HFE
Q108	8-729-119-76	TRANSISTOR 2SA1175-HFE
Q201	8-729-105-88	TRANSISTOR 2SC2570A
Q202	8-729-105-88	TRANSISTOR 2SC2570A
Q203	8-729-103-19	TRANSISTOR 2SA1206-K1
Q204	8-729-103-19	TRANSISTOR 2SA1206-K1
Q205	8-729-105-88	TRANSISTOR 2SC2570A
Q206	8-729-802-45	TRANSISTOR 2SK125-5
Q207	8-729-119-76	TRANSISTOR 2SA1175-HFE
Q208	8-729-119-76	TRANSISTOR 2SA1175-HFE
Q301	8-729-105-88	TRANSISTOR 2SC2570A
Q302	8-729-105-88	TRANSISTOR 2SC2570A
Q303	8-729-103-19	TRANSISTOR 2SA1206-K1
Q304	8-729-103-19	TRANSISTOR 2SA1206-K1
Q305	8-729-105-88	TRANSISTOR 2SC2570A
Q306	8-729-802-45	TRANSISTOR 2SK125-5
Q307	8-729-119-76	TRANSISTOR 2SA1175-HFE
Q308	8-729-119-76	TRANSISTOR 2SA1175-HFE

<RESISTOR>

R013	1-247-903-00	CARBON	1M	5%	1/4W
R101	1-249-405-11	CARBON	100	5%	1/4W
R102	1-249-433-11	CARBON	22K	5%	1/4W
R103	1-215-413-00	METAL	470	1%	1/6W
R104	1-215-429-00	METAL	2.2K	1%	1/6W
R105	1-215-429-00	METAL	2.2K	1%	1/6W
R106	1-249-405-11	CARBON	100	5%	1/4W
R107	1-215-415-00	METAL	560	1%	1/6W
R108	1-249-405-11	CARBON	100	5%	1/4W
R109	1-215-411-00	METAL	390	1%	1/6W
R110	1-249-405-11	CARBON	100	5%	1/4W
R111	1-215-411-00	METAL	390	1%	1/6W
R112	1-249-405-11	CARBON	100	5%	1/4W
R113	1-249-421-11	CARBON	2.2K	5%	1/4W
R116	1-249-417-11	CARBON	1K	5%	1/4W

REF. NO.	PART NO.	DESCRIPTION				REMARK
R117	1-247-846-11	CARBON	4.3K	5%	1/4W	
R118	1-249-435-11	CARBON	33K	5%	1/4W	
R122	1-249-405-11	CARBON	100	5%	1/4W	
R123	1-249-429-11	CARBON	10K	5%	1/4W	
R124	1-247-903-00	CARBON	1M	5%	1/4W	
R125	1-249-405-11	CARBON	100	5%	1/4W	
R126	1-215-419-00	METAL	820	1%	1/6W	
R127	1-215-409-00	METAL	330	1%	1/6W	
R128	1-215-429-00	METAL	2.2K	1%	1/6W	
R129	1-215-429-00	METAL	2.2K	1%	1/6W	
R131	1-215-445-00	METAL	10K	1%	1/6W	
R132	1-215-409-00	METAL	330	1%	1/6W	
R133	1-215-423-00	METAL	1.2K	1%	1/6W	
R134	1-215-445-00	METAL	10K	1%	1/6W	
R135	1-215-428-00	METAL	2K	1%	1/6W	
R136	1-215-445-00	METAL	10K	1%	1/6W	
R139	1-215-421-00	METAL	1K	1%	1/6W	
R140	1-215-441-00	METAL	6.8K	1%	1/6W	
R141	1-214-702-00	METAL	75	1%	1/4W	
R142	1-249-399-11	CARBON	33	5%	1/4W	
R144	1-249-429-11	CARBON	10K	5%	1/4W	
R145	1-249-393-11	CARBON	10	5%	1/4W	
R146	1-247-903-00	CARBON	1M	5%	1/4W	
R148	1-249-405-11	CARBON	100	5%	1/4W	
R149	1-249-441-11	CARBON	100K	5%	1/4W	
R201	1-249-405-11	CARBON	100	5%	1/4W	
R202	1-249-433-11	CARBON	22K	5%	1/4W	
R203	1-215-413-00	METAL	470	1%	1/6W	
R204	1-215-429-00	METAL	2.2K	1%	1/6W	
R205	1-215-429-00	METAL	2.2K	1%	1/6W	
R206	1-249-405-11	CARBON	100	5%	1/4W	
R207	1-215-415-00	METAL	560	1%	1/6W	
R208	1-249-405-11	CARBON	100	5%	1/4W	
R209	1-215-411-00	METAL	390	1%	1/6W	
R210	1-249-405-11	CARBON	100	5%	1/4W	
R211	1-215-411-00	METAL	390	1%	1/6W	
R212	1-249-405-11	CARBON	100	5%	1/4W	
R213	1-249-421-11	CARBON	2.2K	5%	1/4W	
R216	1-249-417-11	CARBON	1K	5%	1/4W	
R217	1-247-846-11	CARBON	4.3K	5%	1/4W	
R218	1-249-435-11	CARBON	33K	5%	1/4W	
R222	1-249-405-11	CARBON	100	5%	1/4W	
R223	1-249-429-11	CARBON	10K	5%	1/4W	
R224	1-247-903-00	CARBON	1M	5%	1/4W	
R225	1-249-405-11	CARBON	100	5%	1/4W	
R226	1-215-419-00	METAL	820	1%	1/6W	
R227	1-215-409-00	METAL	330	1%	1/6W	
R228	1-215-429-00	METAL	2.2K	1%	1/6W	
R229	1-215-429-00	METAL	2.2K	1%	1/6W	
R231	1-215-445-00	METAL	10K	1%	1/6W	
R232	1-215-409-00	METAL	330	1%	1/6W	
R233	1-215-423-00	METAL	1.2K	1%	1/6W	
R234	1-215-445-00	METAL	10K	1%	1/6W	
R235	1-215-428-00	METAL	2K	1%	1/6W	
R236	1-215-445-00	METAL	10K	1%	1/6W	
R239	1-215-421-00	METAL	1K	1%	1/6W	
R240	1-215-441-00	METAL	6.8K	1%	1/6W	
R241	1-214-702-00	METAL	75	1%	1/4W	
R242	1-249-399-11	CARBON	33	5%	1/4W	
R244	1-249-429-11	CARBON	10K	5%	1/4W	
R245	1-249-393-11	CARBON	10	5%	1/4W	
R246	1-247-903-00	CARBON	1M	5%	1/4W	
R248	1-249-405-11	CARBON	100	5%	1/4W	
R249	1-249-441-11	CARBON	100K	5%	1/4W	
R301	1-249-405-11	CARBON	100	5%	1/4W	
R302	1-249-433-11	CARBON	22K	5%	1/4W	

REF. NO.	PART NO.	DESCRIPTION				REMARK
R303	1-215-413-00	METAL	470	1%	1/6W	
R304	1-215-429-00	METAL	2.2K	1%	1/6W	
R305	1-215-429-00	METAL	2.2K	1%	1/6W	
R306	1-249-405-11	CARBON	100	5%	1/4W	
R307	1-215-415-00	METAL	560	1%	1/6W	
R308	1-249-405-11	CARBON	100	5%	1/4W	
R309	1-215-411-00	METAL	390	1%	1/6W	
R310	1-249-405-11	CARBON	100	5%	1/4W	
R311	1-215-411-00	METAL	390	1%	1/6W	
R312	1-249-405-11	CARBON	100	5%	1/4W	
R313	1-249-421-11	CARBON	2.2K	5%	1/4W	
R316	1-249-417-11	CARBON	1K	5%	1/4W	
R317	1-247-846-11	CARBON	4.3K	5%	1/4W	
R318	1-249-435-11	CARBON	33K	5%	1/4W	
R322	1-249-405-11	CARBON	100	5%	1/4W	
R323	1-249-429-11	CARBON	10K	5%	1/4W	
R324	1-247-903-00	CARBON	1M	5%	1/4W	
R325	1-249-405-11	CARBON	100	5%	1/4W	
R326	1-215-419-00	METAL	820	1%	1/6W	
R327	1-215-409-00	METAL	330	1%	1/6W	
R328	1-215-429-00	METAL	2.2K	1%	1/6W	
R329	1-215-429-00	METAL	2.2K	1%	1/6W	
R331	1-215-445-00	METAL	10K	1%	1/6W	
R332	1-215-409-00	METAL	330	1%	1/6W	
R333	1-215-423-00	METAL	1.2K	1%	1/6W	
R334	1-215-445-00	METAL	10K	1%	1/6W	
R335	1-215-428-00	METAL	2K	1%	1/6W	
R336	1-215-445-00	METAL	10K	1%	1/6W	
R339	1-215-421-00	METAL	1K	1%	1/6W	
R340	1-215-441-00	METAL	6.8K	1%	1/6W	
R341	1-214-702-00	METAL	75	1%	1/4W	
R342	1-249-399-11	CARBON	33	5%	1/4W	
R344	1-249-429-11	CARBON	10K	5%	1/4W	
R345	1-249-393-11	CARBON	10	5%	1/4W	
R346	1-247-903-00	CARBON	1M	5%	1/4W	
R348	1-249-405-11	CARBON	100	5%	1/4W	
R349	1-249-441-11	CARBON	100K	5%	1/4W	

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*A-1296-450-A BB BOARD, COMPLETE
****

*4-353-708-00 HOOK, FINGER

<CONNECTOR>

BB1	*1-562-729-11	CONNECTOR, MULTI 64P	
	4-378-915-01	NUT (M2.6), PLATE;BB1	

<CAPACITOR>

C1	1-101-004-00	CERAMIC	0.01MF		50V
C2	1-124-791-11	ELECT	1MF	20%	50V
C3	1-101-888-00	CERAMIC	68PF	5%	50V
C4	1-123-330-00	ELECT	22MF	20%	25V
C5	1-101-004-00	CERAMIC	0.01MF		50V
C6	1-124-791-11	ELECT	1MF	20%	50V
C7	1-101-004-00	CERAMIC	0.01MF		50V
C8	1-124-791-11	ELECT	1MF	20%	50V
C9	1-102-972-00	CERAMIC	91PF	5%	50V
C10	1-101-004-00	CERAMIC	0.01MF		50V
C11	1-101-004-00	CERAMIC	0.01MF		50V
C12	1-102-944-00	CERAMIC	7PF	1PF	50V
C13	1-123-330-00	ELECT	22MF	20%	25V
C14	1-101-004-00	CERAMIC	0.01MF		50V
C15	1-101-004-00	CERAMIC	0.01MF		50V

BB

REF. NO.	PART NO.	DESCRIPTION				REMARK
C16	1-101-888-00	CERAMIC	68PF	5%	50V	
C17	1-123-330-00	ELECT	22MF	20%	25V	
C18	1-101-004-00	CERAMIC	0.01MF		50V	
C19	1-101-004-00	CERAMIC	0.01MF		50V	
C20	1-102-972-00	CERAMIC	91PF	5%	50V	
C21	1-102-944-00	CERAMIC	7PF	1PF	50V	
C22	1-123-330-00	ELECT	22MF	20%	25V	
C23	1-101-004-00	CERAMIC	0.01MF		50V	
C24	1-101-888-00	CERAMIC	68PF	5%	50V	
C25	1-123-330-00	ELECT	22MF	20%	25V	
C26	1-101-004-00	CERAMIC	0.01MF		50V	
C27	1-101-004-00	CERAMIC	0.01MF		50V	
C28	1-102-972-00	CERAMIC	91PF	5%	50V	
C29	1-102-944-00	CERAMIC	7PF	1PF	50V	
C30	1-123-330-00	ELECT	22MF	20%	25V	
C31	1-102-935-00	CERAMIC	2PF	0.25PF	50V	
C32	1-101-888-00	CERAMIC	68PF	5%	50V	
C33	1-123-330-00	ELECT	22MF	20%	25V	
C34	1-124-277-11	ELECT	4.7MF	20%	35V	
C35	1-126-101-11	ELECT	100MF	20%	16V	
C36	1-123-330-00	ELECT	22MF	20%	25V	
C37	1-124-126-00	ELECT	47MF	20%	16V	
C38	1-123-321-00	ELECT	220MF	20%	16V	
C39	1-101-004-00	CERAMIC	0.01MF		50V	
C40	1-124-126-00	ELECT	47MF	20%	16V	
C41	1-101-004-00	CERAMIC	0.01MF		50V	
C42	1-124-126-00	ELECT	47MF	20%	16V	
C43	1-123-330-00	ELECT	22MF	20%	25V	
C44	1-101-004-00	CERAMIC	0.01MF		50V	
C45	1-124-126-00	ELECT	47MF	20%	16V	
C46	1-123-321-00	ELECT	220MF	20%	16V	
C47	1-101-004-00	CERAMIC	0.01MF		50V	
C48	1-124-126-00	ELECT	47MF	20%	16V	
C49	1-124-126-00	ELECT	47MF	20%	16V	
C50	1-101-004-00	CERAMIC	0.01MF		50V	
C51	1-124-126-00	ELECT	47MF	20%	16V	
C52	1-123-330-00	ELECT	22MF	20%	25V	
C53	1-101-004-00	CERAMIC	0.01MF		50V	
C54	1-124-126-00	ELECT	47MF	20%	16V	
C55	1-101-004-00	CERAMIC	0.01MF		50V	
C56	1-123-330-00	ELECT	22MF	20%	25V	
C57	1-123-330-00	ELECT	22MF	20%	25V	
C58	1-123-330-00	ELECT	22MF	20%	25V	
C59	1-123-330-00	ELECT	22MF	20%	25V	
C60	1-123-330-00	ELECT	22MF	20%	25V	
C61	1-123-330-00	ELECT	22MF	20%	25V	
C62	1-123-330-00	ELECT	22MF	20%	25V	
C63	1-123-330-00	ELECT	22MF	20%	25V	
C64	1-123-330-00	ELECT	22MF	20%	25V	
C65	1-123-330-00	ELECT	22MF	20%	25V	
C66	1-123-330-00	ELECT	22MF	20%	25V	
C67	1-123-330-00	ELECT	22MF	20%	25V	
C68	1-123-330-00	ELECT	22MF	20%	25V	
C69	1-123-330-00	ELECT	22MF	20%	25V	
C70	1-123-330-00	ELECT	22MF	20%	25V	
C71	1-123-330-00	ELECT	22MF	20%	25V	
C72	1-123-330-00	ELECT	22MF	20%	25V	
C73	1-123-330-00	ELECT	22MF	20%	25V	
C74	1-123-330-00	ELECT	22MF	20%	25V	
C75	1-123-330-00	ELECT	22MF	20%	25V	
C76	1-101-004-00	CERAMIC	0.01MF		50V	
C77	1-101-004-00	CERAMIC	0.01MF		50V	
C78	1-101-004-00	CERAMIC	0.01MF		50V	
C79	1-101-004-00	CERAMIC	0.01MF		50V	
C80	1-101-004-00	CERAMIC	0.01MF		50V	
C81	1-101-004-00	CERAMIC	0.01MF		50V	
C82	1-101-004-00	CERAMIC	0.01MF		50V	
C83	1-101-004-00	CERAMIC	0.01MF		50V	
C84	1-101-004-00	CERAMIC	0.01MF		50V	
C85	1-101-004-00	CERAMIC	0.01MF		50V	
C86	1-101-004-00	CERAMIC	0.01MF		50V	
C87	1-101-004-00	CERAMIC	0.01MF		50V	
C88	1-101-004-00	CERAMIC	0.01MF		50V	
C89	1-101-004-00	CERAMIC	0.01MF		50V	
C90	1-101-004-00	CERAMIC	0.01MF		50V	
C91	1-124-282-00	ELECT	22MF	20%	16V	
C92	1-124-282-00	ELECT	22MF	20%	16V	
C93	1-124-282-00	ELECT	22MF	20%	16V	
C94	1-124-282-00	ELECT	22MF	20%	16V	
C95	1-124-282-00	ELECT	22MF	20%	16V	
C96	1-124-282-00	ELECT	22MF	20%	16V	
C97	1-124-282-00	ELECT	22MF	20%	16V	
C98	1-124-282-00	ELECT	22MF	20%	16V	
C99	1-124-282-00	ELECT	22MF	20%	16V	

<DIODE>

D1	8-719-911-19	DIODE 1SS119
D2	8-719-911-19	DIODE 1SS119
D3	8-719-911-19	DIODE 1SS119
D4	8-719-110-41	DIODE RD15ES-B2
D5	8-719-911-19	DIODE 1SS119
D6	8-719-109-93	DIODE RD6.2ES-B2
D7	8-719-110-41	DIODE RD15ES-B2
D8	8-719-911-19	DIODE 1SS119
D9	8-719-110-41	DIODE RD15ES-B2
D10	8-719-110-13	DIODE RD9.1ES-B2
D11	8-719-110-41	DIODE RD15ES-B2
D12	8-719-109-93	DIODE RD6.2ES-B2
D13	8-719-911-19	DIODE 1SS119
D14	8-719-110-13	DIODE RD9.1ES-B2
D15	8-719-109-93	DIODE RD6.2ES-B2
D16	8-719-911-19	DIODE 1SS119
D17	8-719-110-13	DIODE RD9.1ES-B2
D18	8-719-911-19	DIODE 1SS119
D19	8-719-110-13	DIODE RD9.1ES-B2
D20	8-719-911-19	DIODE 1SS119
D21	8-719-109-81	DIODE RD4.7ES-B2
D22	8-719-110-17	DIODE RD10ES-B2
D23	8-719-110-22	DIODE RD11ES-B2
D24	8-719-109-89	DIODE RD5.6ES-B2
D25	8-719-110-13	DIODE RD9.1ES-B2
D26	8-719-110-17	DIODE RD10ES-B2

<DELAY LINE>

DL1	1-415-466-11	DELAY LINE
DL2	1-415-466-11	DELAY LINE
DL3	1-415-466-11	DELAY LINE
DL4	1-415-465-11	DELAY LINE
DL5	1-415-465-11	DELAY LINE
DL6	1-415-464-11	DELAY LINE

<IC>

IC1	8-759-800-81	IC LA7016
IC2	8-759-800-81	IC LA7016
IC3	8-759-800-81	IC LA7016
IC4	8-741-119-00	IC BX-1190
IC5	8-741-119-00	IC BX-1190
IC6	8-759-800-81	IC LA7016
IC7	8-759-800-81	IC LA7016

REF. NO.	PART NO.	DESCRIPTION	REMARK
IC8	8-759-800-81	IC LA7016	
IC9	8-759-800-81	IC LA7016	
IC10	8-759-800-81	IC LA7016	
IC11	8-759-800-81	IC LA7016	
		<CONNECTOR>	
J1	1-560-914-00	POST, CONNECTOR 2P	
J1	*1-561-724-00	SOCKET, CONNECTOR 2P	
J2	1-560-914-00	POST, CONNECTOR 2P	
J2	*1-561-724-00	SOCKET, CONNECTOR 2P	
		<TRANSISTOR>	
Q1	8-729-103-19	TRANSISTOR 2SA1206-K1	
Q2	8-729-105-88	TRANSISTOR 2SC2570A	
Q3	8-729-105-88	TRANSISTOR 2SC2570A	
Q4	8-729-105-88	TRANSISTOR 2SC2570A	
Q5	8-729-103-19	TRANSISTOR 2SA1206-K1	
Q6	8-729-105-88	TRANSISTOR 2SC2570A	
Q7	8-729-105-88	TRANSISTOR 2SC2570A	
Q8	8-729-105-88	TRANSISTOR 2SC2570A	
Q9	8-729-103-19	TRANSISTOR 2SA1206-K1	
Q10	8-729-105-88	TRANSISTOR 2SC2570A	
Q11	8-729-105-88	TRANSISTOR 2SC2570A	
Q12	8-729-105-88	TRANSISTOR 2SC2570A	
Q13	8-729-103-19	TRANSISTOR 2SA1206-K1	
Q14	8-729-105-88	TRANSISTOR 2SC2570A	
Q15	8-729-105-88	TRANSISTOR 2SC2570A	
Q16	8-729-105-88	TRANSISTOR 2SC2570A	
Q17	8-729-103-19	TRANSISTOR 2SA1206-K1	
Q18	8-729-105-88	TRANSISTOR 2SC2570A	
Q19	8-729-105-88	TRANSISTOR 2SC2570A	
Q20	8-729-105-88	TRANSISTOR 2SC2570A	
Q21	8-729-103-19	TRANSISTOR 2SA1206-K1	
Q22	8-729-105-88	TRANSISTOR 2SC2570A	
Q23	8-729-105-88	TRANSISTOR 2SC2570A	
Q24	8-729-105-88	TRANSISTOR 2SC2570A	
Q25	8-729-103-19	TRANSISTOR 2SA1206-K1	
Q26	8-729-103-19	TRANSISTOR 2SA1206-K1	
Q27	8-729-105-88	TRANSISTOR 2SC2570A	
Q28	8-729-103-19	TRANSISTOR 2SA1206-K1	
Q29	8-729-103-19	TRANSISTOR 2SA1206-K1	
Q30	8-729-105-88	TRANSISTOR 2SC2570A	
Q31	8-729-105-88	TRANSISTOR 2SC2570A	
Q32	8-729-105-88	TRANSISTOR 2SC2570A	
Q33	8-729-105-88	TRANSISTOR 2SC2570A	
Q34	8-729-103-19	TRANSISTOR 2SA1206-K1	
Q35	8-729-105-88	TRANSISTOR 2SC2570A	
Q36	8-729-105-88	TRANSISTOR 2SC2570A	
Q37	8-729-378-84	TRANSISTOR 2SD788-5	
Q38	8-729-378-84	TRANSISTOR 2SD788-5	
Q39	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q40	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q41	8-729-600-82	TRANSISTOR 2SA1282-F	
Q42	8-729-600-82	TRANSISTOR 2SA1282-F	
Q43	8-729-119-76	TRANSISTOR 2SA1175-HFE	
		<RESISTOR>	
R1	1-249-435-11	CARBON 33K 5% 1/4W	
R2	1-249-429-11	CARBON 10K 5% 1/4W	
R3	1-249-405-11	CARBON 100 5% 1/4W	
R4	1-249-405-11	CARBON 100 5% 1/4W	
R5	1-249-427-11	CARBON 6.8K 5% 1/4W	
R6	1-249-405-11	CARBON 100 5% 1/4W	
R7	1-249-405-11	CARBON 100 5% 1/4W	
R8	1-249-435-11	CARBON 33K 5% 1/4W	
R9	1-249-423-11	CARBON 3.3K 5% 1/4W	
R10	1-249-405-11	CARBON 100 5% 1/4W	
R11	1-249-405-11	CARBON 100 5% 1/4W	
R12	1-249-405-11	CARBON 100 5% 1/4W	
R13	1-249-421-11	CARBON 2.2K 5% 1/4W	
R14	1-215-421-00	METAL 1K 1% 1/6W	
R15	1-249-405-11	CARBON 100 5% 1/4W	
R16	1-215-439-00	METAL 5.6K 1% 1/6W	
R17	1-215-459-00	METAL 39K 1% 1/6W	
R18	1-215-421-00	METAL 1K 1% 1/6W	
R19	1-249-437-11	CARBON 47K 5% 1/4W	
R20	1-215-413-00	METAL 470 1% 1/6W	
R21	1-215-384-00	METAL 30 1% 1/6W	
R22	1-215-407-00	METAL 270 1% 1/6W	
R25	1-215-429-00	METAL 2.2K 1% 1/6W	
R26	1-215-443-00	METAL 8.2K 1% 1/6W	
R27	1-249-405-11	CARBON 100 5% 1/4W	
R28	1-215-413-00	METAL 470 1% 1/6W	
R29	1-249-417-11	CARBON 1K 5% 1/4W	
R30	1-249-405-11	CARBON 100 5% 1/4W	
R31	1-249-421-11	CARBON 2.2K 5% 1/4W	
R32	1-249-405-11	CARBON 100 5% 1/4W	
R33	1-249-405-11	CARBON 100 5% 1/4W	
R34	1-249-427-11	CARBON 6.8K 5% 1/4W	
R35	1-249-405-11	CARBON 100 5% 1/4W	
R36	1-249-435-11	CARBON 33K 5% 1/4W	
R37	1-249-405-11	CARBON 100 5% 1/4W	
R38	1-215-429-00	METAL 2.2K 1% 1/6W	
R39	1-249-405-11	CARBON 100 5% 1/4W	
R40	1-249-405-11	CARBON 100 5% 1/4W	
R41	1-249-405-11	CARBON 100 5% 1/4W	
R42	1-249-418-11	CARBON 1.2K 5% 1/4W	
R43	1-215-397-00	METAL 100 1% 1/6W	
R44	1-215-397-00	METAL 100 1% 1/6W	
R45	1-249-405-11	CARBON 100 5% 1/4W	
R46	1-249-405-11	CARBON 100 5% 1/4W	
R47	1-249-427-11	CARBON 6.8K 5% 1/4W	
R48	1-249-405-11	CARBON 100 5% 1/4W	
R49	1-249-435-11	CARBON 33K 5% 1/4W	
R50	1-249-431-11	CARBON 15K 5% 1/4W	
R51	1-215-405-00	METAL 220 1% 1/6W	
R52	1-215-411-00	METAL 390 1% 1/6W	
R53	1-215-429-00	METAL 2.2K 1% 1/6W	
R55	1-249-405-11	CARBON 100 5% 1/4W	
R56	1-215-415-00	METAL 560 1% 1/6W	
R57	1-249-405-11	CARBON 100 5% 1/4W	
R58	1-249-405-11	CARBON 100 5% 1/4W	
R59	1-249-421-11	CARBON 2.2K 5% 1/4W	
R60	1-215-393-00	METAL 68 1% 1/6W	
R61	1-249-429-11	CARBON 10K 5% 1/4W	
R62	1-249-405-11	CARBON 100 5% 1/4W	
R63	1-215-394-00	METAL 75 1% 1/6W	
R64	1-249-405-11	CARBON 100 5% 1/4W	
R65	1-249-427-11	CARBON 6.8K 5% 1/4W	
R66	1-249-405-11	CARBON 100 5% 1/4W	
R67	1-249-435-11	CARBON 33K 5% 1/4W	
R68	1-249-405-11	CARBON 100 5% 1/4W	
R69	1-249-423-11	CARBON 3.3K 5% 1/4W	
R70	1-249-405-11	CARBON 100 5% 1/4W	
R71	1-249-405-11	CARBON 100 5% 1/4W	
R72	1-249-405-11	CARBON 100 5% 1/4W	
R73	1-249-421-11	CARBON 2.2K 5% 1/4W	
R74	1-249-437-11	CARBON 47K 5% 1/4W	
R75	1-215-413-00	METAL 470 1% 1/6W	

BB

REF. NO.	PART NO.	DESCRIPTION				REMARK
R76	1-215-393-00	METAL	68	1%	1/6W	
R77	1-215-420-00	METAL	910	1%	1/6W	
R78	1-215-391-00	METAL	56	1%	1/6W	
R79	1-215-428-00	METAL	2K	1%	1/6W	
R80	1-215-429-00	METAL	2.2K	1%	1/6W	
R81	1-215-443-00	METAL	8.2K	1%	1/6W	
R82	1-249-405-11	CARBON	100	5%	1/4W	
R83	1-215-413-00	METAL	470	1%	1/6W	
R84	1-249-417-11	CARBON	1K	5%	1/4W	
R85	1-249-405-11	CARBON	100	5%	1/4W	
R86	1-249-421-11	CARBON	2.2K	5%	1/4W	
R87	1-249-405-11	CARBON	100	5%	1/4W	
R88	1-249-405-11	CARBON	100	5%	1/4W	
R89	1-249-405-11	CARBON	100	5%	1/4W	
R90	1-249-405-11	CARBON	100	5%	1/4W	
R91	1-215-429-00	METAL	2.2K	1%	1/6W	
R92	1-249-405-11	CARBON	100	5%	1/4W	
R93	1-249-405-11	CARBON	100	5%	1/4W	
R94	1-249-405-11	CARBON	100	5%	1/4W	
R95	1-249-418-11	CARBON	1.2K	5%	1/4W	
R96	1-215-397-00	METAL	100	1%	1/6W	
R97	1-215-397-00	METAL	100	1%	1/6W	
R98	1-249-405-11	CARBON	100	5%	1/4W	
R99	1-249-405-11	CARBON	100	5%	1/4W	
R100	1-249-405-11	CARBON	100	5%	1/4W	
R101	1-249-431-11	CARBON	15K	5%	1/4W	
R102	1-215-405-00	METAL	220	1%	1/6W	
R103	1-215-411-00	METAL	390	1%	1/6W	
R104	1-215-429-00	METAL	2.2K	1%	1/6W	
R106	1-249-405-11	CARBON	100	5%	1/4W	
R107	1-215-415-00	METAL	560	1%	1/6W	
R108	1-249-405-11	CARBON	100	5%	1/4W	
R109	1-249-405-11	CARBON	100	5%	1/4W	
R110	1-249-421-11	CARBON	2.2K	5%	1/4W	
R111	1-215-393-00	METAL	68	1%	1/6W	
R112	1-249-429-11	CARBON	10K	5%	1/4W	
R113	1-249-405-11	CARBON	100	5%	1/4W	
R114	1-249-405-11	CARBON	100	5%	1/4W	
R115	1-249-405-11	CARBON	100	5%	1/4W	
R116	1-249-405-11	CARBON	100	5%	1/4W	
R117	1-249-423-11	CARBON	3.3K	5%	1/4W	
R118	1-249-405-11	CARBON	100	5%	1/4W	
R119	1-249-405-11	CARBON	100	5%	1/4W	
R120	1-249-405-11	CARBON	100	5%	1/4W	
R121	1-249-421-11	CARBON	2.2K	5%	1/4W	
R122	1-215-421-00	METAL	1K	1%	1/6W	
R123	1-249-405-11	CARBON	100	5%	1/4W	
R124	1-215-439-00	METAL	5.6K	1%	1/6W	
R125	1-215-459-00	METAL	39K	1%	1/6W	
R126	1-215-421-00	METAL	1K	1%	1/6W	
R127	1-249-437-11	CARBON	47K	5%	1/4W	
R128	1-215-413-00	METAL	470	1%	1/6W	
R131	1-215-379-00	METAL	18	1%	1/6W	
R132	1-215-406-00	METAL	240	1%	1/6W	
R133	1-215-429-00	METAL	2.2K	1%	1/6W	
R134	1-215-443-00	METAL	8.2K	1%	1/6W	
R135	1-249-405-11	CARBON	100	5%	1/4W	
R136	1-215-413-00	METAL	470	1%	1/6W	
R137	1-249-417-11	CARBON	1K	5%	1/4W	
R138	1-249-405-11	CARBON	100	5%	1/4W	
R139	1-249-421-11	CARBON	2.2K	5%	1/4W	
R140	1-249-405-11	CARBON	100	5%	1/4W	
R141	1-249-405-11	CARBON	100	5%	1/4W	
R142	1-249-405-11	CARBON	100	5%	1/4W	
R143	1-249-405-11	CARBON	100	5%	1/4W	
R144	1-215-429-00	METAL	2.2K	1%	1/6W	

REF. NO.	PART NO.	DESCRIPTION				REMARK
R145	1-249-405-11	CARBON	100	5%	1/4W	
R146	1-249-405-11	CARBON	100	5%	1/4W	
R147	1-249-405-11	CARBON	100	5%	1/4W	
R148	1-249-418-11	CARBON	1.2K	5%	1/4W	
R149	1-215-397-00	METAL	100	1%	1/6W	
R150	1-215-397-00	METAL	100	1%	1/6W	
R151	1-249-405-11	CARBON	100	5%	1/4W	
R152	1-249-405-11	CARBON	100	5%	1/4W	
R153	1-249-405-11	CARBON	100	5%	1/4W	
R154	1-249-431-11	CARBON	15K	5%	1/4W	
R155	1-215-405-00	METAL	220	1%	1/6W	
R156	1-215-411-00	METAL	390	1%	1/6W	
R157	1-215-429-00	METAL	2.2K	1%	1/6W	
R159	1-249-405-11	CARBON	100	5%	1/4W	
R160	1-215-415-00	METAL	560	1%	1/6W	
R161	1-249-405-11	CARBON	100	5%	1/4W	
R162	1-249-405-11	CARBON	100	5%	1/4W	
R163	1-249-421-11	CARBON	2.2K	5%	1/4W	
R164	1-215-393-00	METAL	68	1%	1/6W	
R165	1-215-405-00	METAL	220	1%	1/6W	
R166	1-215-429-00	METAL	2.2K	1%	1/6W	
R167	1-215-401-11	METAL	150	1%	1/6W	
R168	1-215-401-11	METAL	150	1%	1/6W	
R169	1-215-421-00	METAL	1K	1%	1/6W	
R170	1-215-429-00	METAL	2.2K	1%	1/6W	
R171	1-215-455-00	METAL	27K	1%	1/6W	
R172	1-215-415-00	METAL	560	1%	1/6W	
R173	1-215-429-00	METAL	2.2K	1%	1/6W	
R174	1-249-405-11	CARBON	100	5%	1/4W	
R175	1-249-401-11	CARBON	47	5%	1/4W	
R176	1-249-426-11	CARBON	5.6K	5%	1/4W	
R177	1-249-411-11	CARBON	330	5%	1/4W	
R178	1-249-437-11	CARBON	47K	5%	1/4W	
R179	1-249-423-11	CARBON	3.3K	5%	1/4W	
R180	1-249-405-11	CARBON	100	5%	1/4W	
R181	1-249-405-11	CARBON	100	5%	1/4W	
R182	1-249-405-11	CARBON	100	5%	1/4W	
R183	1-249-421-11	CARBON	2.2K	5%	1/4W	
R184	1-249-405-11	CARBON	100	5%	1/4W	
R185	1-249-415-11	CARBON	680	5%	1/4W	
R186	1-249-405-11	CARBON	100	5%	1/4W	
R187	1-215-397-00	METAL	100	1%	1/6W	
R188	1-215-397-00	METAL	100	1%	1/6W	
R189	1-249-405-11	CARBON	100	5%	1/4W	
R190	1-249-423-11	CARBON	3.3K	5%	1/4W	
R191	1-249-405-11	CARBON	100	5%	1/4W	
R192	1-249-405-11	CARBON	100	5%	1/4W	
R193	1-249-405-11	CARBON	100	5%	1/4W	
R194	1-249-415-11	CARBON	680	5%	1/4W	
R195	1-215-397-00	METAL	100	1%	1/6W	
R196	1-215-397-00	METAL	100	1%	1/6W	
R197	1-249-405-11	CARBON	100	5%	1/4W	
R198	1-249-405-11	CARBON	100	5%	1/4W	
R199	1-249-421-11	CARBON	2.2K	5%	1/4W	
R200	1-215-428-00	METAL	2K	1%	1/6W	
R201	1-215-407-00	METAL	270	1%	1/6W	
R202	1-215-441-00	METAL	6.8K	1%	1/6W	
R203	1-215-437-00	METAL	4.7K	1%	1/6W	
R204	1-249-401-11	CARBON	47	5%	1/4W	
R205	1-215-403-00	METAL	180	1%	1/6W	
R206	1-215-409-00	METAL	330	1%	1/6W	
R207	1-215-435-00	METAL	3.9K	1%	1/6W	
R208	1-215-433-00	METAL	3.3K	1%	1/6W	
R209	1-249-405-11	CARBON	100	5%	1/4W	
R210	1-249-405-11	CARBON	100	5%	1/4W	
R211	1-215-429-00	METAL	2.2K	1%	1/6W	

REF. NO.	PART NO.	DESCRIPTION				REMARK
R212	1-215-405-00	METAL	220	1%	1/6W	
R213	1-215-391-00	METAL	56	1%	1/6W	
R214	1-215-413-00	METAL	470	1%	1/6W	
R215	1-215-417-00	METAL	680	1%	1/6W	
R216	1-249-405-11	CARBON	100	5%	1/4W	
R217	1-249-405-11	CARBON	100	5%	1/4W	
R218	1-249-422-11	CARBON	2.7K	5%	1/4W	
R219	1-215-397-00	METAL	100	1%	1/6W	
R220	1-215-397-00	METAL	100	1%	1/6W	
R221	1-249-422-11	CARBON	2.7K	5%	1/4W	
R222	1-247-736-11	CARBON	56	5%	1/2W	
R223	1-249-417-11	CARBON	1K	5%	1/4W	
R224	1-249-438-11	CARBON	56K	5%	1/4W	
R225	1-249-426-11	CARBON	5.6K	5%	1/4W	
R226	1-249-437-11	CARBON	47K	5%	1/4W	
R227	1-249-417-11	CARBON	1K	5%	1/4W	
R228	1-247-731-11	CARBON	22	5%	1/2W	
R229	1-249-417-11	CARBON	1K	5%	1/4W	
R230	1-249-441-11	CARBON	100K	5%	1/4W	
R231	1-249-441-11	CARBON	100K	5%	1/4W	
R232	1-215-419-00	METAL	820	1%	1/6W	
R233	1-215-455-00	METAL	27K	1%	1/6W	
R236	1-215-415-00	METAL	560	1%	1/6W	
R237	1-215-432-00	METAL	3K	1%	1/6W	
R239	1-249-409-11	CARBON	220	5%	1/4W	
R240	1-249-438-11	CARBON	56K	5%	1/4W	
R241	1-249-438-11	CARBON	56K	5%	1/4W	
R242	1-249-438-11	CARBON	56K	5%	1/4W	
R243	1-249-438-11	CARBON	56K	5%	1/4W	
R244	1-249-438-11	CARBON	56K	5%	1/4W	
R245	1-249-438-11	CARBON	56K	5%	1/4W	
R246	1-249-438-11	CARBON	56K	5%	1/4W	
R247	1-249-438-11	CARBON	56K	5%	1/4W	
R248	1-249-438-11	CARBON	56K	5%	1/4W	
R249	1-249-409-11	CARBON	220	5%	1/4W	

<VARIABLE RESISTOR>

RV1	1-237-512-21	RES, ADJ, CERMET	100
RV2	1-237-512-21	RES, ADJ, CERMET	100
RV3	1-237-512-21	RES, ADJ, CERMET	100
RV4	1-237-513-21	RES, ADJ, CERMET	200
RV5	1-237-512-21	RES, ADJ, CERMET	100
RV6	1-237-513-21	RES, ADJ, CERMET	200
RV7	1-237-513-21	RES, ADJ, CERMET	200
RV8	1-237-513-21	RES, ADJ, CERMET	200
RV9	1-237-512-21	RES, ADJ, CERMET	100
RV10	1-237-512-21	RES, ADJ, CERMET	100
RV11	1-237-512-21	RES, ADJ, CERMET	100

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	*A-1296-451-A	BE BOARD, COMPLETE
		**********
	*4-353-708-00	HOOK, FINGER
	4-378-915-01	NUT (M2.6), PLATE

<CONNECTOR>

BE1	*1-562-729-11	CONNECTOR, MULTI 64P

<CAPACITOR>

C1	1-124-472-11	ELECT	470MF	20%	6.3V
C2	1-124-120-11	ELECT	220MF	20%	16V
C3	1-161-051-00	CERAMIC	0.01MF	10%	25V
C4	1-124-120-11	ELECT	220MF	20%	16V
C5	1-161-051-00	CERAMIC	0.01MF	10%	25V
C6	1-124-120-11	ELECT	220MF	20%	16V
C7	1-124-120-11	ELECT	220MF	20%	16V
C8	1-161-055-00	CERAMIC	0.022MF	10%	25V
C9	1-161-051-00	CERAMIC	0.01MF	10%	25V
C10	1-101-884-00	CERAMIC	56PF	5%	50V
C11	1-161-051-00	CERAMIC	0.01MF	10%	25V
C12	1-124-120-11	ELECT	220MF	20%	16V
C13	1-101-880-00	CERAMIC	47PF	5%	50V
C14	1-102-816-00	CERAMIC	120PF	5%	50V
C15	1-102-980-00	CERAMIC	270PF	5%	50V
C16	1-102-959-00	CERAMIC	22PF	5%	50V
C17	1-130-475-00	MYLAR	0.0022MF	5%	50V
C18	1-161-051-00	CERAMIC	0.01MF	10%	25V
C19	1-161-051-00	CERAMIC	0.01MF	10%	25V
C20	1-161-051-00	CERAMIC	0.01MF	10%	25V
C21	1-161-051-00	CERAMIC	0.01MF	10%	25V
C22	1-161-051-00	CERAMIC	0.01MF	10%	25V
C23	1-161-051-00	CERAMIC	0.01MF	10%	25V
C24	1-161-051-00	CERAMIC	0.01MF	10%	25V
C25	1-161-051-00	CERAMIC	0.01MF	10%	25V
C26	1-126-176-11	ELECT	220MF	20%	6.3V
C27	1-161-051-00	CERAMIC	0.01MF	10%	25V
C28	1-126-176-11	ELECT	220MF	20%	6.3V
C29	1-161-051-00	CERAMIC	0.01MF	10%	25V
C30	1-161-051-00	CERAMIC	0.01MF	10%	25V
C31	1-136-165-00	FILM	0.1MF	5%	50V
C32	1-136-165-00	FILM	0.1MF	5%	50V
C34	1-124-791-11	ELECT	1MF	20%	50V
C35	1-123-330-00	ELECT	22MF	20%	16V
C36	1-126-101-11	ELECT	100MF	20%	16V
C38	1-161-051-00	CERAMIC	0.01MF	10%	25V
C39	1-161-051-00	CERAMIC	0.01MF	10%	25V
C40	1-161-051-00	CERAMIC	0.01MF	10%	25V

<DIODE>

D1	8-719-911-19	DIODE 1SS119
D2	8-719-911-19	DIODE 1SS119
D3	8-719-911-19	DIODE 1SS119
D4	8-719-911-19	DIODE 1SS119
D5	8-719-911-19	DIODE 1SS119
D6	8-719-911-19	DIODE 1SS119
D8	8-719-911-19	DIODE 1SS119
D9	8-719-911-19	DIODE 1SS119

<IC>

IC1	8-759-910-00	IC SN74S00N
IC2	8-759-911-63	IC SN74S163N
IC3	8-759-901-63	IC SN74LS163AN
IC4	8-759-901-63	IC SN74LS163AN
IC5	8-759-901-63	IC SN74LS163AN
IC6	8-759-741-17	IC MB7138E-HSGH
	*1-526-658-21	SOCKET, IC (DP) 24P;IC6
IC7	8-759-913-74	IC SN74S374N
IC8	8-759-901-63	IC SN74LS163AN
IC9	8-759-901-63	IC SN74LS163AN
IC10	8-759-901-63	IC SN74LS163AN
IC11	8-759-741-18	IC MBM2764-VSGH
	*1-526-659-00	SOCKET, IC (DP) 28P;IC11
IC12	8-759-901-75	IC SN74LS175N
IC13	8-759-901-75	IC SN74LS175N
IC14	8-759-974-06	IC SN7406N
IC15	8-759-766-76	IC MB7053-PTD

BE BF

REF. NO.	PART NO.	DESCRIPTION	REMARK
	*1-526-654-00	SOCKET, IC (DP) 16P;IC15	
IC16	8-759-901-37	IC SN74LS137N	
IC17	8-759-974-07	IC SN7407N	
IC18	8-759-901-61	IC SN74LS161AN	
IC19	8-759-988-75	IC MB7116H-K-COMPH	
	*1-526-654-00	SOCKET, IC (DP) 16P;IC19	
IC20	8-759-901-75	IC SN74LS175N	
IC21	8-759-910-00	IC SN74S00N	
IC22	8-759-982-25	IC RC78L09A	
IC23	8-759-900-08	IC SN74LS08N	
IC24	8-759-900-32	IC SN74LS32N	
IC25	8-759-900-00	IC SN74LS00N	
IC26	8-759-989-69	IC SN74LS86AN	
IC27	8-759-900-08	IC SN74LS08N	
		<COIL>	
L1	1-408-088-00	INDUCTOR 220UH	
L2	1-408-088-00	INDUCTOR 220UH	
		<TRANSISTOR>	
Q1	8-729-313-82	TRANSISTOR 2SD1138-C	
Q2	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q3	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q4	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q5	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q6	8-729-300-13	TRANSISTOR 2SC2471	
Q7	8-729-110-53	TRANSISTOR 2SA1005-K	
Q8	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q9	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q10	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q11	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q12	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q13	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q14	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q15	8-729-119-78	TRANSISTOR 2SC2785-HFE	
		<RESISTOR>	
R1	1-249-414-11	CARBON 560 5% 1/4W	
R2	1-249-417-11	CARBON 1K 5% 1/4W	
R3	1-249-417-11	CARBON 1K 5% 1/4W	
R4	1-249-429-11	CARBON 10K 5% 1/4W	
R5	1-249-429-11	CARBON 10K 5% 1/4W	
R6	1-249-429-11	CARBON 10K 5% 1/4W	
R7	1-249-429-11	CARBON 10K 5% 1/4W	
R8	1-249-429-11	CARBON 10K 5% 1/4W	
R9	1-249-417-11	CARBON 1K 5% 1/4W	
R10	1-249-429-11	CARBON 10K 5% 1/4W	
R11	1-249-429-11	CARBON 10K 5% 1/4W	
R12	1-249-429-11	CARBON 10K 5% 1/4W	
R13	1-249-429-11	CARBON 10K 5% 1/4W	
R14	1-249-429-11	CARBON 10K 5% 1/4W	
R15	1-249-405-11	CARBON 100 5% 1/4W	
R16	1-215-378-00	METAL 16 1% 1/6W	
R17	1-215-378-00	METAL 16 1% 1/6W	
R18	1-215-383-00	METAL 27 1% 1/6W	
R19	1-249-429-11	CARBON 10K 5% 1/4W	
R20	1-249-429-11	CARBON 10K 5% 1/4W	
R21	1-215-391-00	METAL 56 1% 1/6W	
R22	1-215-377-00	METAL 15 1% 1/6W	
R23	1-215-377-00	METAL 15 1% 1/6W	
R24	1-247-848-11	CARBON 5.1K 5% 1/4W	
R25	1-215-437-00	METAL 4.7K 1% 1/6W	
R26	1-215-405-00	METAL 220 1% 1/6W	
R27	1-215-428-00	METAL 2K 1% 1/6W	
R28	1-249-388-11	CARBON 3.9 5% 1/4W	
R29	1-249-429-11	CARBON 10K 5% 1/4W	
R30	1-247-804-11	CARBON 75 5% 1/4W	
R31	1-249-429-11	CARBON 10K 5% 1/4W	
R32	1-249-388-11	CARBON 3.9 5% 1/4W	
R33	1-249-429-11	CARBON 10K 5% 1/4W	
R34	1-215-441-00	METAL 6.8K 1% 1/6W	
R35	1-249-429-11	CARBON 10K 5% 1/4W	
R36	1-247-804-11	CARBON 75 5% 1/4W	
R37	1-249-388-11	CARBON 3.9 5% 1/4W	
R38	1-249-388-11	CARBON 3.9 5% 1/4W	
R39	1-249-411-11	CARBON 330 5% 1/4W	
R40	1-249-411-11	CARBON 330 5% 1/4W	
R41	1-249-435-11	CARBON 33K 5% 1/4W	
R42	1-249-405-11	CARBON 100 5% 1/4W	
R44	1-215-399-00	METAL 120 1% 1/6W	
R45	1-215-431-00	METAL 2.7K 1% 1/6W	
R46	1-215-455-00	METAL 27K 1% 1/6W	
R47	1-215-421-00	METAL 1K 1% 1/6W	
R48	1-215-441-00	METAL 6.8K 1% 1/6W	
R49	1-215-413-00	METAL 470 1% 1/6W	
R50	1-215-441-00	METAL 6.8K 1% 1/6W	
R51	1-215-421-00	METAL 1K 1% 1/6W	
R52	1-215-431-00	METAL 2.7K 1% 1/6W	
R53	1-215-415-00	METAL 560 1% 1/6W	
R54	1-215-433-00	METAL 3.3K 1% 1/6W	
R55	1-249-413-11	CARBON 470 5% 1/4W	
R56	1-215-427-00	METAL 1.8K 1% 1/6W	
R57	1-249-421-11	CARBON 2.2K 5% 1/4W	
R58	1-249-421-11	CARBON 2.2K 5% 1/4W	
R61	1-249-425-11	CARBON 4.7K 5% 1/4W	
		<RESISTOR BLOCK>	
RB1	1-231-407-00	RESISTOR BLOCK 2.2K	
RB2	1-231-407-00	RESISTOR BLOCK 2.2K	
		<VARIABLE RESISTOR>	
RV1	1-237-518-21	RES, ADJ, CERMET 10K	
		<CRYSTAL>	
X1	1-527-819-11	VIBRATOR, CRYSTAL	
		**********	
	*A-1296-452-A	BF BOARD, COMPLETE	
		**********	
	*4-353-708-00	HOOK, FINGER	
		<CONNECTOR>	
BF1	*1-562-729-11	CONNECTOR, MULTI 64P	
	4-378-915-01	NUT (M2.6), PLATE;BF1	
		<CAPACITOR>	
C001	1-124-478-11	ELECT 100MF 20% 25V	
C002	1-101-004-00	CERAMIC 0.01MF 50V	
C003	1-124-478-11	ELECT 100MF 20% 25V	
C004	1-101-004-00	CERAMIC 0.01MF 50V	
C005	1-124-478-11	ELECT 100MF 20% 25V	
C006	1-124-478-11	ELECT 100MF 20% 25V	
C007	1-124-478-11	ELECT 100MF 20% 25V	

REF. NO.	PART NO.	DESCRIPTION				REMARK
C008	1-101-004-00	CERAMIC	0.01MF		50V	
C009	1-124-478-11	ELECT	100MF	20%	25V	
C010	1-101-004-00	CERAMIC	0.01MF		50V	
C011	1-124-478-11	ELECT	100MF	20%	25V	
C012	1-101-004-00	CERAMIC	0.01MF		50V	
C013	1-101-004-00	CERAMIC	0.01MF		50V	
C014	1-101-004-00	CERAMIC	0.01MF		50V	
C015	1-101-004-00	CERAMIC	0.01MF		50V	
C017	1-101-004-00	CERAMIC	0.01MF		50V	
C019	1-101-004-00	CERAMIC	0.01MF		50V	
C020	1-101-004-00	CERAMIC	0.01MF		50V	
C101	1-124-477-11	ELECT	47MF	20%	25V	
C102	1-124-791-11	ELECT	1MF	20%	50V	
C103	1-124-477-11	ELECT	47MF	20%	25V	
C104	1-102-824-00	CERAMIC	470PF	5%	50V	
C105	1-102-824-00	CERAMIC	470PF	5%	50V	
C106	1-124-477-11	ELECT	47MF	20%	25V	
C107	1-124-477-11	ELECT	47MF	20%	25V	
C108	1-101-004-00	CERAMIC	0.01MF		50V	
C109	1-124-120-11	ELECT	220MF	20%	25V	
C111	1-124-925-11	ELECT	2.2MF	20%	50V	
C112	1-126-233-11	ELECT	22MF	20%	25V	
C113	1-124-477-11	ELECT	47MF	20%	25V	
C115	1-124-477-11	ELECT	47MF	20%	25V	
C116	1-108-792-11	MYLAR	0.001MF	5%	50V	
C117	1-101-004-00	CERAMIC	0.01MF		50V	
C118	1-102-973-00	CERAMIC	100PF	5%	50V	
C119	1-101-004-00	CERAMIC	0.01MF		50V	
C120	1-124-477-11	ELECT	47MF	20%	25V	
C121	1-124-791-11	ELECT	1MF	20%	50V	
C122	1-102-978-00	CERAMIC	220PF	5%	50V	
C123	1-101-004-00	CERAMIC	0.01MF		50V	
C124	1-102-820-00	CERAMIC	330PF	5%	50V	
C125	1-101-004-00	CERAMIC	0.01MF		50V	
C126	1-101-880-00	CERAMIC	47PF	5%	50V	
C127	1-101-880-00	CERAMIC	47PF	5%	50V	
C128	1-124-006-11	ELECT	10MF	20%	25V	
C129	1-102-959-00	CERAMIC	22PF	5%	50V	
C130	1-102-973-00	CERAMIC	100PF	5%	50V	
C131	1-102-824-00	CERAMIC	470PF	5%	50V	
C132	1-102-824-00	CERAMIC	470PF	5%	50V	
C133	1-101-361-00	CERAMIC	150PF	5%	50V	
C134	1-102-973-00	CERAMIC	100PF	5%	50V	
C135	1-101-004-00	CERAMIC	0.01MF		50V	
C136	1-101-004-00	CERAMIC	0.01MF		50V	
C137	1-101-004-00	CERAMIC	0.01MF		50V	
C138	1-101-004-00	CERAMIC	0.01MF		50V	
C139	1-101-004-00	CERAMIC	0.01MF		50V	
C140	1-101-004-00	CERAMIC	0.01MF		50V	
C141	1-124-477-11	ELECT	47MF	20%	25V	
C142	1-136-173-00	FILM	0.47MF	5%	50V	
C201	1-102-820-00	CERAMIC	330PF	5%	50V	
C203	1-102-961-00	CERAMIC	27PF	5%	50V	
C204	1-102-973-00	CERAMIC	100PF	5%	50V	
C205	1-101-888-00	CERAMIC	68PF	5%	50V	
C206	1-102-973-00	CERAMIC	100PF	5%	50V	
C207	1-136-153-00	FILM	0.01MF	5%	50V	
C208	1-123-875-11	ELECT	10MF	20%	50V	
C209	1-101-004-00	CERAMIC	0.01MF		50V	
C210	1-101-004-00	CERAMIC	0.01MF		50V	
C211	1-101-004-00	CERAMIC	0.01MF		50V	
C212	1-101-004-00	CERAMIC	0.01MF		50V	
C213	1-101-004-00	CERAMIC	0.01MF		50V	
C214	1-101-004-00	CERAMIC	0.01MF		50V	
C215	1-124-477-11	ELECT	47MF	20%	25V	
C216	1-124-477-11	ELECT	47MF	20%	25V	

REF. NO.	PART NO.	DESCRIPTION				REMARK
C221	1-102-980-00	CERAMIC	270PF	5%	50V	
C222	1-101-361-00	CERAMIC	150PF	5%	50V	
C301	1-102-820-00	CERAMIC	330PF	5%	50V	
C302	1-101-004-00	CERAMIC	0.01MF		50V	
C303	1-101-880-00	CERAMIC	47PF	5%	50V	
C304	1-101-880-00	CERAMIC	47PF	5%	50V	
C305	1-124-006-11	ELECT	10MF	20%	25V	
C306	1-124-277-11	ELECT	4.7MF	20%	35V	
C307	1-108-796-11	MYLAR	0.0022MF	5%	50V	
C308	1-108-796-11	MYLAR	0.0022MF	5%	50V	
C309	1-136-169-00	FILM	0.22MF	5%	50V	
C310	1-136-153-00	FILM	0.01MF	5%	50V	
C311	1-101-004-00	CERAMIC	0.01MF		50V	
C312	1-101-004-00	CERAMIC	0.01MF		50V	
C314	1-124-477-11	ELECT	47MF	20%	25V	
C315	1-124-477-11	ELECT	47MF	20%	25V	
C316	1-124-478-11	ELECT	100MF	20%	25V	
C320	1-101-004-00	CERAMIC	0.01MF		50V	
C351	1-101-001-00	CERAMIC	0.001MF		50V	

<DIODE>

D002	8-719-911-19	DIODE 1SS119
D004	8-719-911-19	DIODE 1SS119
D005	8-719-911-19	DIODE 1SS119
D006	8-719-911-19	DIODE 1SS119
D007	8-719-911-19	DIODE 1SS119
D008	8-719-911-19	DIODE 1SS119
D009	8-719-911-19	DIODE 1SS119
D011	8-719-911-19	DIODE 1SS119
D101	8-719-911-19	DIODE 1SS119
D102	8-719-911-19	DIODE 1SS119
D103	8-719-911-19	DIODE 1SS119
D104	8-719-911-19	DIODE 1SS119
D105	8-719-911-19	DIODE 1SS119
D106	8-719-911-19	DIODE 1SS119
D107	8-719-911-19	DIODE 1SS119
D108	8-719-911-19	DIODE 1SS119
D110	8-719-109-89	DIODE RD5.6ES-B2
D111	8-719-109-89	DIODE RD5.6ES-B2
D112	8-719-109-89	DIODE RD5.6ES-B2
D202	8-719-911-19	DIODE 1SS119
D301	8-719-911-19	DIODE 1SS119
D302	8-719-911-19	DIODE 1SS119
D303	8-719-911-19	DIODE 1SS119
D304	8-719-911-19	DIODE 1SS119

<IC>

IC4	8-759-916-15	IC SN74HC05N
IC002	8-759-982-21	IC RC78L05A
IC101	8-759-240-53	IC TC4053BP
IC102	8-759-014-96	IC MC1496P
IC103	8-759-203-83	IC TC74HC4538P
IC104	8-759-203-83	IC TC74HC4538P
IC105	8-759-921-17	IC SN74HC153N
IC106	8-759-203-83	IC TC74HC4538P
IC201	8-759-921-09	IC SN74HC36N
IC202	8-759-000-99	IC MC74HC74N
IC203	8-759-203-83	IC TC74HC4538P
IC204	8-759-203-83	IC TC74HC4538P
IC205	8-759-921-17	IC SN74HC153N
IC206	8-759-203-83	IC TC74HC4538P
IC301	8-759-921-17	IC SN74HC153N
IC302	8-759-203-83	IC TC74HC4538P

BF

REF. NO.	PART NO.	DESCRIPTION	REMARK
		<COIL>	
L001	1-408-429-00	INDUCTOR 470UH	
L002	1-408-429-00	INDUCTOR 470UH	
		<TRANSISTOR>	
Q002	8-729-900-80	TRANSISTOR DTC114ES	
Q101	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q102	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q103	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q104	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q105	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q106	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q108	8-729-103-19	TRANSISTOR 2SA1206-K1	
Q109	8-729-105-88	TRANSISTOR 2SC2570A	
Q110	8-729-105-88	TRANSISTOR 2SC2570A	
Q111	8-729-697-92	TRANSISTOR 2SA979-G	
Q112	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q113	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q114	8-729-697-92	TRANSISTOR 2SA979-G	
Q115	8-729-697-92	TRANSISTOR 2SA979-G	
Q117	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q118	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q119	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q120	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q121	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q122	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q123	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q124	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q125	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q126	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q201	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q202	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q203	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q204	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q301	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q302	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q303	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q304	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q305	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q306	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q307	8-729-119-78	TRANSISTOR 2SC2785-HFE	
		<RESISTOR>	
R001	1-249-441-11	CARBON 100K 5% 1/4W	
R002	1-249-441-11	CARBON 100K 5% 1/4W	
R003	1-249-441-11	CARBON 100K 5% 1/4W	
R006	1-249-441-11	CARBON 100K 5% 1/4W	
R008	1-249-417-11	CARBON 1K 5% 1/4W	
R009	1-249-441-11	CARBON 100K 5% 1/4W	
R010	1-249-437-11	CARBON 47K 5% 1/4W	
R011	1-249-437-11	CARBON 47K 5% 1/4W	
R012	1-249-437-11	CARBON 47K 5% 1/4W	
R013	1-249-437-11	CARBON 47K 5% 1/4W	
R015	1-249-437-11	CARBON 47K 5% 1/4W	
R016	1-249-405-11	CARBON 100 5% 1/4W	
R017	1-249-405-11	CARBON 100 5% 1/4W	
R019	1-249-405-11	CARBON 100 5% 1/4W	
R020	1-249-437-11	CARBON 47K 5% 1/4W	
R021	1-249-437-11	CARBON 47K 5% 1/4W	
R022	1-249-437-11	CARBON 47K 5% 1/4W	
R023	1-249-437-11	CARBON 47K 5% 1/4W	
R024	1-249-437-11	CARBON 47K 5% 1/4W	
R101	1-249-410-11	CARBON 270 5% 1/4W	

REF. NO.	PART NO.	DESCRIPTION	REMARK
R102	1-215-469-00	METAL 100K 1% 1/6W	
R103	1-249-405-11	CARBON 100 5% 1/4W	
R104	1-215-464-00	METAL 62K 1% 1/6W	
R105	1-249-405-11	CARBON 100 5% 1/4W	
R106	1-249-426-11	CARBON 5.6K 5% 1/4W	
R107	1-249-411-11	CARBON 330 5% 1/4W	
R108	1-215-469-00	METAL 100K 1% 1/6W	
R109	1-249-405-11	CARBON 100 5% 1/4W	
R110	1-215-464-00	METAL 62K 1% 1/6W	
R111	1-249-405-11	CARBON 100 5% 1/4W	
R112	1-249-426-11	CARBON 5.6K 5% 1/4W	
R113	1-249-425-11	CARBON 4.7K 5% 1/4W	
R114	1-215-469-00	METAL 100K 1% 1/6W	
R115	1-249-405-11	CARBON 100 5% 1/4W	
R116	1-215-464-00	METAL 62K 1% 1/6W	
R117	1-249-405-11	CARBON 100 5% 1/4W	
R118	1-249-426-11	CARBON 5.6K 5% 1/4W	
R119	1-249-399-11	CARBON 33 5% 1/4W	
R120	1-249-399-11	CARBON 33 5% 1/4W	
R121	1-249-428-11	CARBON 8.2K 5% 1/4W	
R122	1-249-429-11	CARBON 10K 5% 1/4W	
R123	1-249-427-11	CARBON 6.8K 5% 1/4W	
R124	1-249-405-11	CARBON 100 5% 1/4W	
R125	1-249-401-11	CARBON 47 5% 1/4W	
R126	1-249-401-11	CARBON 47 5% 1/4W	
R127	1-215-397-00	METAL 100 1% 1/6W	
R128	1-215-405-00	METAL 220 1% 1/6W	
R129	1-215-423-00	METAL 1.2K 1% 1/6W	
R130	1-215-435-00	METAL 3.9K 1% 1/6W	
R131	1-215-469-00	METAL 100K 1% 1/6W	
R132	1-215-441-00	METAL 6.8K 1% 1/6W	
R133	1-215-443-00	METAL 8.2K 1% 1/6W	
R134	1-249-427-11	CARBON 6.8K 5% 1/4W	
R135	1-249-405-11	CARBON 100 5% 1/4W	
R136	1-215-445-00	METAL 10K 1% 1/6W	
R137	1-215-415-00	METAL 560 1% 1/6W	
R138	1-215-443-00	METAL 8.2K 1% 1/6W	
R139	1-215-419-00	METAL 820 1% 1/6W	
R140	1-215-443-00	METAL 8.2K 1% 1/6W	
R141	1-215-433-00	METAL 3.3K 1% 1/6W	
R142	1-249-415-11	CARBON 680 5% 1/4W	
R143	1-215-427-00	METAL 1.8K 1% 1/6W	
R144	1-249-401-11	CARBON 47 5% 1/4W	
R145	1-249-421-11	CARBON 2.2K 5% 1/4W	
R146	1-249-431-11	CARBON 15K 5% 1/4W	
R147	1-215-435-00	METAL 3.9K 1% 1/6W	
R148	1-249-425-11	CARBON 4.7K 5% 1/4W	
R149	1-249-437-11	CARBON 47K 5% 1/4W	
R150	1-247-881-00	CARBON 120K 5% 1/4W	
R151	1-247-895-00	CARBON 470K 5% 1/4W	
R152	1-249-416-11	CARBON 820 5% 1/4W	
R153	1-215-411-00	METAL 390 1% 1/6W	
R154	1-249-418-11	CARBON 1.2K 5% 1/4W	
R155	1-215-441-00	METAL 6.8K 1% 1/6W	
R156	1-215-413-00	METAL 470 1% 1/6W	
R157	1-249-425-11	CARBON 4.7K 5% 1/4W	
R158	1-247-887-00	CARBON 220K 5% 1/4W	
R159	1-249-423-11	CARBON 3.3K 5% 1/4W	
R160	1-249-421-11	CARBON 2.2K 5% 1/4W	
R161	1-249-419-11	CARBON 1.5K 5% 1/4W	
R162	1-249-421-11	CARBON 2.2K 5% 1/4W	
R163	1-249-421-11	CARBON 2.2K 5% 1/4W	
R164	1-249-405-11	CARBON 100 5% 1/4W	
R165	1-249-405-11	CARBON 100 5% 1/4W	
R166	1-249-429-11	CARBON 10K 5% 1/4W	

REF. NO.	PART NO.	DESCRIPTION				REMARK
R167	1-249-405-11	CARBON	100	5%	1/4W	
R168	1-249-425-11	CARBON	4.7K	5%	1/4W	
R169	1-249-405-11	CARBON	100	5%	1/4W	
R170	1-249-405-11	CARBON	100	5%	1/4W	
R171	1-249-414-11	CARBON	560	5%	1/4W	
R172	1-249-414-11	CARBON	560	5%	1/4W	
R173	1-249-430-11	CARBON	12K	5%	1/4W	
R174	1-249-405-11	CARBON	100	5%	1/4W	
R175	1-249-429-11	CARBON	10K	5%	1/4W	
R176	1-249-429-11	CARBON	10K	5%	1/4W	
R177	1-247-889-00	CARBON	270K	5%	1/4W	
R178	1-249-423-11	CARBON	3.3K	5%	1/4W	
R179	1-215-421-00	METAL	1K	1%	1/6W	
R180	1-215-441-00	METAL	6.8K	1%	1/6W	
R181	1-215-469-00	METAL	100K	1%	1/6W	
R182	1-215-460-00	METAL	43K	1%	1/6W	
R183	1-215-465-00	METAL	68K	1%	1/6W	
R184	1-215-441-00	METAL	6.8K	1%	1/6W	
R185	1-249-416-11	CARBON	820	5%	1/4W	
R187	1-249-417-11	CARBON	1K	5%	1/4W	
R188	1-249-393-11	CARBON	10	5%	1/4W	
R189	1-249-405-11	CARBON	100	5%	1/4W	
R201	1-249-417-11	CARBON	1K	5%	1/4W	
R202	1-249-421-11	CARBON	2.2K	5%	1/4W	
R203	1-249-417-11	CARBON	1K	5%	1/4W	
R204	1-249-393-11	CARBON	10	5%	1/4W	
R205	1-249-417-11	CARBON	1K	5%	1/4W	
R206	1-249-405-11	CARBON	100	5%	1/4W	
R207	1-215-421-00	METAL	1K	1%	1/6W	
R208	1-215-421-00	METAL	1K	1%	1/6W	
R209	1-215-421-00	METAL	1K	1%	1/6W	
R210	1-215-437-00	METAL	4.7K	1%	1/6W	
R211	1-215-459-00	METAL	39K	1%	1/6W	
R212	1-249-429-11	CARBON	10K	5%	1/4W	
R213	1-249-425-11	CARBON	4.7K	5%	1/4W	
R214	1-249-429-11	CARBON	10K	5%	1/4W	
R221	1-249-414-11	CARBON	560	5%	1/4W	
R222	1-249-414-11	CARBON	560	5%	1/4W	
R301	1-249-421-11	CARBON	2.2K	5%	1/4W	
R302	1-249-421-11	CARBON	2.2K	5%	1/4W	
R303	1-249-405-11	CARBON	100	5%	1/4W	
R304	1-249-405-11	CARBON	100	5%	1/4W	
R305	1-249-429-11	CARBON	10K	5%	1/4W	
R306	1-249-405-11	CARBON	100	5%	1/4W	
R307	1-249-425-11	CARBON	4.7K	5%	1/4W	
R308	1-249-405-11	CARBON	100	5%	1/4W	
R309	1-249-405-11	CARBON	100	5%	1/4W	
R310	1-249-430-11	CARBON	12K	5%	1/4W	
R311	1-249-417-11	CARBON	1K	5%	1/4W	
R312	1-249-417-11	CARBON	1K	5%	1/4W	
R313	1-249-405-11	CARBON	100	5%	1/4W	
R314	1-249-429-11	CARBON	10K	5%	1/4W	
R315	1-249-429-11	CARBON	10K	5%	1/4W	
R316	1-247-889-00	CARBON	270K	5%	1/4W	
R317	1-249-423-11	CARBON	3.3K	5%	1/4W	
R318	1-249-405-11	CARBON	100	5%	1/4W	
R319	1-249-437-11	CARBON	47K	5%	1/4W	
R320	1-249-429-11	CARBON	10K	5%	1/4W	
R321	1-215-433-00	METAL	3.3K	1%	1/6W	
R322	1-215-433-00	METAL	3.3K	1%	1/6W	
R323	1-249-423-11	CARBON	3.3K	5%	1/4W	
R324	1-215-460-00	METAL	43K	1%	1/6W	
R325	1-215-449-00	METAL	15K	1%	1/6W	
R326	1-249-417-11	CARBON	1K	5%	1/4W	

REF. NO.	PART NO.	DESCRIPTION				REMARK
		<VARIABLE RESISTOR>				
RV101	1-237-520-21	RES, ADJ, CERMET 50K				
RV102	1-237-520-21	RES, ADJ, CERMET 50K				
RV201	1-237-520-21	RES, ADJ, CERMET 50K				
RV202	1-237-518-21	RES, ADJ, CERMET 10K				
RV203	1-237-518-21	RES, ADJ, CERMET 10K				
RV204	1-237-517-21	RES, ADJ, CERMET 5K				
RV301	1-237-519-21	RES, ADJ, CERMET 20K				
**********						
	*A-1296-453-A	BG BOARD, COMPLETE				
		**********				
	*4-353-708-00	HOOK, FINGER				
		<CONNECTOR>				
BG1	*1-562-729-11	CONNECTOR, MULTI 64P				
	4-378-915-01	NUT (M2.6), PLATE;BG1				
		<CAPACITOR>				
C1	1-124-477-11	ELECT	47MF	20%	25V	
C2	1-101-004-00	CERAMIC	0.01MF		50V	
C3	1-124-477-11	ELECT	47MF	20%	25V	
C4	1-101-004-00	CERAMIC	0.01MF		50V	
C5	1-124-120-11	ELECT	220MF	20%	25V	
C6	1-124-477-11	ELECT	47MF	20%	25V	
C7	1-101-004-00	CERAMIC	0.01MF		50V	
C8	1-124-120-11	ELECT	220MF	20%	25V	
C9	1-124-477-11	ELECT	47MF	20%	25V	
C10	1-101-004-00	CERAMIC	0.01MF		50V	
C11	1-124-477-11	ELECT	47MF	20%	25V	
C12	1-101-004-00	CERAMIC	0.01MF		50V	
C13	1-124-120-11	ELECT	220MF	20%	25V	
C100	1-136-165-00	FILM	0.1MF	5%	50V	
C101	1-124-478-11	ELECT	100MF	20%	25V	
C102	1-101-004-00	CERAMIC	0.01MF		50V	
C103	1-101-004-00	CERAMIC	0.01MF		50V	
C104	1-101-004-00	CERAMIC	0.01MF		50V	
C105	1-101-004-00	CERAMIC	0.01MF		50V	
C106	1-101-004-00	CERAMIC	0.01MF		50V	
C107	1-101-004-00	CERAMIC	0.01MF		50V	
C108	1-101-004-00	CERAMIC	0.01MF		50V	
C109	1-124-478-11	ELECT	100MF	20%	25V	
C110	1-101-004-00	CERAMIC	0.01MF		50V	
C111	1-101-004-00	CERAMIC	0.01MF		50V	
C112	1-101-004-00	CERAMIC	0.01MF		50V	
C113	1-101-004-00	CERAMIC	0.01MF		50V	
C114	1-123-875-11	ELECT	10MF	20%	50V	
C115	1-123-875-11	ELECT	10MF	20%	50V	
C116	1-101-004-00	CERAMIC	0.01MF		50V	
C119	1-124-477-11	ELECT	47MF	20%	25V	
C120	1-101-004-00	CERAMIC	0.01MF		50V	
C121	1-124-477-11	ELECT	47MF	20%	25V	
C122	1-101-004-00	CERAMIC	0.01MF		50V	
C123	1-101-004-00	CERAMIC	0.01MF		50V	
C124	1-136-161-00	FILM	0.047MF	5%	50V	
C125	1-123-875-11	ELECT	10MF	20%	50V	
C126	1-136-161-00	FILM	0.047MF	5%	50V	
C127	1-101-004-00	CERAMIC	0.01MF		50V	
C128	1-101-004-00	CERAMIC	0.01MF		50V	
C129	1-101-004-00	CERAMIC	0.01MF		50V	
C130	1-101-004-00	CERAMIC	0.01MF		50V	
C131	1-101-004-00	CERAMIC	0.01MF		50V	
C132	1-101-004-00	CERAMIC	0.01MF		50V	

BG

REF. NO.	PART NO.	DESCRIPTION				REMARK
C133	1-102-824-00	CERAMIC	470PF	5%	50V	
C200	1-124-477-11	ELECT	47MF	20%	25V	
C201	1-101-004-00	CERAMIC	0.01MF		50V	
C202	1-102-959-00	CERAMIC	22PF	5%	50V	
C203	1-102-973-00	CERAMIC	100PF	5%	50V	
C204	1-102-973-00	CERAMIC	100PF	5%	50V	
C205	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C206	1-101-004-00	CERAMIC	0.01MF		50V	
C207	1-101-004-00	CERAMIC	0.01MF		50V	
C208	1-101-004-00	CERAMIC	0.01MF		50V	
C209	1-102-959-00	CERAMIC	22PF	5%	50V	
C210	1-102-973-00	CERAMIC	100PF	5%	50V	
C211	1-101-004-00	CERAMIC	0.01MF		50V	
C212	1-102-959-00	CERAMIC	22PF	5%	50V	
C213	1-102-959-00	CERAMIC	22PF	5%	50V	
C214	1-101-004-00	CERAMIC	0.01MF		50V	
C215	1-102-973-00	CERAMIC	100PF	5%	50V	
C216	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C217	1-101-004-00	CERAMIC	0.01MF		50V	
C218	1-101-004-00	CERAMIC	0.01MF		50V	
C219	1-124-443-00	ELECT	100MF	20%	10V	
C220	1-101-004-00	CERAMIC	0.01MF		50V	
C221	1-124-478-11	ELECT	100MF	20%	25V	
C222	1-101-004-00	CERAMIC	0.01MF		50V	
C223	1-124-477-11	ELECT	47MF	20%	25V	
C301	1-101-004-00	CERAMIC	0.01MF		50V	
C302	1-102-824-00	CERAMIC	470PF	5%	50V	
C303	1-102-959-00	CERAMIC	22PF	5%	50V	
C305	1-101-004-00	CERAMIC	0.01MF		50V	
C306	1-101-004-00	CERAMIC	0.01MF		50V	
C307	1-101-004-00	CERAMIC	0.01MF		50V	
C308	1-101-004-00	CERAMIC	0.01MF		50V	
C309	1-102-973-00	CERAMIC	100PF	5%	50V	
C310	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C311	1-101-004-00	CERAMIC	0.01MF		50V	
C312	1-101-004-00	CERAMIC	0.01MF		50V	
C313	1-102-973-00	CERAMIC	100PF	5%	50V	
C314	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C315	1-101-004-00	CERAMIC	0.01MF		50V	
C316	1-101-004-00	CERAMIC	0.01MF		50V	
C317	1-101-004-00	CERAMIC	0.01MF		50V	
C318	1-101-361-00	CERAMIC	150PF	5%	50V	
C319	1-101-361-00	CERAMIC	150PF	5%	50V	
C320	1-102-973-00	CERAMIC	100PF	5%	50V	
C321	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C322	1-123-875-11	ELECT	10MF	20%	50V	
C323	1-101-004-00	CERAMIC	0.01MF		50V	
C324	1-101-004-00	CERAMIC	0.01MF		50V	
C325	1-102-973-00	CERAMIC	100PF	5%	50V	
C326	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C327	1-101-004-00	CERAMIC	0.01MF		50V	
C328	1-101-004-00	CERAMIC	0.01MF		50V	
C329	1-124-443-00	ELECT	100MF	20%	10V	
C330	1-101-004-00	CERAMIC	0.01MF		50V	
C331	1-124-478-11	ELECT	100MF	20%	25V	
C332	1-101-004-00	CERAMIC	0.01MF		50V	
C333	1-124-443-00	ELECT	100MF	20%	10V	
C334	1-101-004-00	CERAMIC	0.01MF		50V	
C335	1-124-477-11	ELECT	47MF	20%	25V	
C336	1-101-004-00	CERAMIC	0.01MF		50V	
C337	1-124-791-11	ELECT	1MF	20%	50V	
C338	1-123-875-11	ELECT	10MF	20%	50V	

REF. NO.	PART NO.	DESCRIPTION	REMARK
		<DIODE>	
D1	8-719-911-19	DIODE 1SS119	
D101	8-719-911-19	DIODE 1SS119	
D201	8-719-110-08	DIODE RD8.2ES-B2	
D202	8-719-911-19	DIODE 1SS119	
D203	8-719-110-08	DIODE RD8.2ES-B2	
D204	8-719-911-19	DIODE 1SS119	
D301	8-719-110-08	DIODE RD8.2ES-B2	
D302	8-719-911-19	DIODE 1SS119	
D303	8-719-110-08	DIODE RD8.2ES-B2	
D304	8-719-911-19	DIODE 1SS119	
D305	8-719-110-08	DIODE RD8.2ES-B2	
D306	8-719-911-19	DIODE 1SS119	
D307	8-719-110-08	DIODE RD8.2ES-B2	
D308	8-719-911-19	DIODE 1SS119	
D309	8-719-911-19	DIODE 1SS119	
		<IC>	
IC1	8-759-924-12	IC LM7805CT	
IC101	8-759-014-95	IC MC1495L	
IC102	8-759-990-82	IC TL082CP	
IC103	8-759-990-82	IC TL082CP	
IC104	8-759-240-53	IC TC4053BP	
IC105	8-759-007-21	IC MC74HC4053N	
IC201	8-759-203-83	IC TC74HC4538P	
IC202	8-759-203-83	IC TC74HC4538P	
IC203	8-759-203-83	IC TC74HC4538P	
IC204	8-759-202-85	IC TC74HC112P	
IC301	8-759-203-83	IC TC74HC4538P	
IC302	8-759-917-11	IC SN74HC393N	
IC303	8-759-202-11	IC TC74HC00P	
IC304	8-759-203-05	IC TC74HC193P	
IC305	8-759-203-05	IC TC74HC193P	
IC306	8-759-203-83	IC TC74HC4538P	
IC307	8-759-202-11	IC TC74HC00P	
IC308	8-759-202-85	IC TC74HC112P	
		<COIL>	
L1	1-408-429-00	INDUCTOR 470UH	
L2	1-408-429-00	INDUCTOR 470UH	
L3	1-408-429-00	INDUCTOR 470UH	
		<TRANSISTOR>	
Q101	8-729-201-05	TRANSISTOR 2SC2878-B	
Q102	8-729-201-05	TRANSISTOR 2SC2878-B	
Q103	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q104	8-729-201-05	TRANSISTOR 2SC2878-B	
Q105	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q106	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q107	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q110	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q111	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q112	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q113	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q114	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q115	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q116	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q117	8-729-802-45	TRANSISTOR 2SK125-5	
Q118	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q200	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q201	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q202	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q203	8-729-119-78	TRANSISTOR 2SC2785-HFE	

REF. NO.	PART NO.	DESCRIPTION	REMARK
Q204	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q205	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q206	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q207	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q208	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q300	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q301	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q302	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q303	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q304	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q305	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q306	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q307	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q308	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q309	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q310	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q311	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q312	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q313	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q314	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q315	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q316	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q317	8-729-900-36	TRANSISTOR DTC124ES	
Q318	8-729-900-36	TRANSISTOR DTC124ES	
Q319	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q320	8-729-119-76	TRANSISTOR 2SA1175-HFE	

<RESISTOR>

REF. NO.	PART NO.	DESCRIPTION				REMARK
R100	1-249-405-11	CARBON	100	5%	1/4W	
R102	1-249-405-11	CARBON	100	5%	1/4W	
R103	1-215-449-00	METAL	15K	1%	1/6W	
R104	1-215-429-00	METAL	2.2K	1%	1/6W	
R105	1-215-449-00	METAL	15K	1%	1/6W	
R106	1-215-429-00	METAL	2.2K	1%	1/6W	
R107	1-215-449-00	METAL	15K	1%	1/6W	
R108	1-215-444-00	METAL	9.1K	1%	1/6W	
R109	1-215-444-00	METAL	9.1K	1%	1/6W	
R110	1-215-413-00	METAL	470	1%	1/6W	
R111	1-249-435-11	CARBON	33K	5%	1/4W	
R112	1-215-433-00	METAL	3.3K	1%	1/6W	
R113	1-215-433-00	METAL	3.3K	1%	1/6W	
R114	1-215-445-00	METAL	10K	1%	1/6W	
R115	1-215-416-00	METAL	620	1%	1/6W	
R116	1-215-445-00	METAL	10K	1%	1/6W	
R117	1-215-447-00	METAL	12K	1%	1/6W	
R118	1-215-417-00	METAL	680	1%	1/6W	
R119	1-215-445-00	METAL	10K	1%	1/6W	
R120	1-215-435-00	METAL	3.9K	1%	1/6W	
R121	1-249-435-11	CARBON	33K	5%	1/4W	
R122	1-249-435-11	CARBON	33K	5%	1/4W	
R123	1-249-435-11	CARBON	33K	5%	1/4W	
R124	1-249-429-11	CARBON	10K	5%	1/4W	
R125	1-249-435-11	CARBON	33K	5%	1/4W	
R126	1-215-443-00	METAL	8.2K	1%	1/6W	
R127	1-215-445-00	METAL	10K	1%	1/6W	
R128	1-215-419-00	METAL	820	1%	1/6W	
R129	1-215-435-00	METAL	3.9K	1%	1/6W	
R130	1-215-437-00	METAL	4.7K	1%	1/6W	
R131	1-215-437-00	METAL	4.7K	1%	1/6W	
R132	1-249-422-11	CARBON	2.7K	5%	1/4W	
R133	1-215-401-11	METAL	150	1%	1/6W	
R134	1-215-401-11	METAL	150	1%	1/6W	
R135	1-215-445-00	METAL	10K	1%	1/6W	
R136	1-215-445-00	METAL	10K	1%	1/6W	
R137	1-215-425-00	METAL	1.5K	1%	1/6W	
R138	1-215-446-00	METAL	11K	1%	1/6W	
R139	1-215-425-00	METAL	1.5K	1%	1/6W	
R140	1-215-447-00	METAL	12K	1%	1/6W	
R144	1-215-417-00	METAL	680	1%	1/6W	
R145	1-215-427-00	METAL	1.8K	1%	1/6W	
R146	1-215-439-00	METAL	5.6K	1%	1/6W	
R147	1-215-439-00	METAL	5.6K	1%	1/6W	
R148	1-249-403-11	CARBON	68	5%	1/4W	
R150	1-215-427-00	METAL	1.8K	1%	1/6W	
R151	1-215-439-00	METAL	5.6K	1%	1/6W	
R152	1-215-439-00	METAL	5.6K	1%	1/6W	
R153	1-249-403-11	CARBON	68	5%	1/4W	
R154	1-215-419-00	METAL	820	1%	1/6W	
R155	1-215-416-00	METAL	620	1%	1/6W	
R156	1-249-417-11	CARBON	1K	5%	1/4W	
R157	1-249-399-11	CARBON	33	5%	1/4W	
R158	1-249-419-11	CARBON	1.5K	5%	1/4W	
R159	1-249-393-11	CARBON	10	5%	1/4W	
R160	1-249-405-11	CARBON	100	5%	1/4W	
R161	1-215-445-00	METAL	10K	1%	1/6W	
R162	1-215-416-00	METAL	620	1%	1/6W	
R163	1-249-429-11	CARBON	10K	5%	1/4W	
R164	1-249-417-11	CARBON	1K	5%	1/4W	
R165	1-249-405-11	CARBON	100	5%	1/4W	
R166	1-249-441-11	CARBON	100K	5%	1/4W	
R167	1-247-903-00	CARBON	1M	5%	1/4W	
R168	1-215-420-00	METAL	910	1%	1/6W	
R169	1-215-445-00	METAL	10K	1%	1/6W	
R170	1-215-436-00	METAL	4.3K	1%	1/6W	
R173	1-249-429-11	CARBON	10K	5%	1/4W	
R174	1-249-405-11	CARBON	100	5%	1/4W	
R175	1-249-405-11	CARBON	100	5%	1/4W	
R176	1-215-487-00	METAL	560K	1%	1/6W	
R201	1-249-427-11	CARBON	6.8K	5%	1/4W	
R202	1-249-423-11	CARBON	3.3K	5%	1/4W	
R203	1-249-430-11	CARBON	12K	5%	1/4W	
R204	1-215-426-00	METAL	1.6K	1%	1/6W	
R205	1-215-433-00	METAL	3.3K	1%	1/6W	
R206	1-249-421-11	CARBON	2.2K	5%	1/4W	
R207	1-249-425-11	CARBON	4.7K	5%	1/4W	
R208	1-249-425-11	CARBON	4.7K	5%	1/4W	
R209	1-249-417-11	CARBON	1K	5%	1/4W	
R210	1-249-429-11	CARBON	10K	5%	1/4W	
R211	1-249-405-11	CARBON	100	5%	1/4W	
R212	1-215-421-00	METAL	1K	1%	1/6W	
R213	1-215-433-00	METAL	3.3K	1%	1/6W	
R214	1-215-421-00	METAL	1K	1%	1/6W	
R215	1-215-421-00	METAL	1K	1%	1/6W	
R216	1-249-421-11	CARBON	2.2K	5%	1/4W	
R217	1-249-425-11	CARBON	4.7K	5%	1/4W	
R218	1-249-425-11	CARBON	4.7K	5%	1/4W	
R219	1-249-417-11	CARBON	1K	5%	1/4W	
R220	1-249-429-11	CARBON	10K	5%	1/4W	
R221	1-249-405-11	CARBON	100	5%	1/4W	
R222	1-249-426-11	CARBON	5.6K	5%	1/4W	
R223	1-249-425-11	CARBON	4.7K	5%	1/4W	
R301	1-249-427-11	CARBON	6.8K	5%	1/4W	
R302	1-249-423-11	CARBON	3.3K	5%	1/4W	
R303	1-249-430-11	CARBON	12K	5%	1/4W	
R304	1-215-468-00	METAL	91K	1%	1/6W	
R305	1-215-421-00	METAL	1K	1%	1/6W	
R309	1-249-421-11	CARBON	2.2K	5%	1/4W	
R310	1-249-425-11	CARBON	4.7K	5%	1/4W	
R311	1-249-425-11	CARBON	4.7K	5%	1/4W	
R312	1-249-417-11	CARBON	1K	5%	1/4W	
R313	1-249-429-11	CARBON	10K	5%	1/4W	

BG **CA**

REF. NO.	PART NO.	DESCRIPTION				REMARK
R314	1-249-405-11	CARBON	100	5%	1/4W	
R315	1-249-421-11	CARBON	2.2K	5%	1/4W	
R316	1-249-425-11	CARBON	4.7K	5%	1/4W	
R317	1-249-425-11	CARBON	4.7K	5%	1/4W	
R318	1-249-417-11	CARBON	1K	5%	1/4W	
R319	1-249-429-11	CARBON	10K	5%	1/4W	
R320	1-249-405-11	CARBON	100	5%	1/4W	
R321	1-215-461-00	METAL	47K	1%	1/6W	
R322	1-215-467-00	METAL	82K	1%	1/6W	
R323	1-249-421-11	CARBON	2.2K	5%	1/4W	
R324	1-249-425-11	CARBON	4.7K	5%	1/4W	
R325	1-249-425-11	CARBON	4.7K	5%	1/4W	
R326	1-249-417-11	CARBON	1K	5%	1/4W	
R327	1-249-429-11	CARBON	10K	5%	1/4W	
R328	1-249-405-11	CARBON	100	5%	1/4W	
R329	1-249-421-11	CARBON	2.2K	5%	1/4W	
R330	1-249-425-11	CARBON	4.7K	5%	1/4W	
R331	1-249-425-11	CARBON	4.7K	5%	1/4W	
R332	1-249-417-11	CARBON	1K	5%	1/4W	
R333	1-249-429-11	CARBON	10K	5%	1/4W	
R334	1-249-405-11	CARBON	100	5%	1/4W	
R335	1-249-426-11	CARBON	5.6K	5%	1/4W	
R336	1-249-421-11	CARBON	2.2K	5%	1/4W	
R337	1-249-405-11	CARBON	100	5%	1/4W	
R338	1-249-405-11	CARBON	100	5%	1/4W	
R339	1-249-405-11	CARBON	100	5%	1/4W	
R340	1-249-441-11	CARBON	100K	5%	1/4W	

<VARIABLE RESISTOR>

RV101	1-237-516-21	RES, ADJ, CERMET 2K
RV102	1-237-519-21	RES, ADJ, CERMET 20K
RV103	1-237-519-21	RES, ADJ, CERMET 20K
RV201	1-237-517-21	RES, ADJ, CERMET 5K
RV202	1-237-517-21	RES, ADJ, CERMET 5K

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*A-1296-648-A CA BOARD, COMPLETE
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4-373-933-01 SHEET (TRANSISTOR), BN

<CAPACITOR>

C2	1-101-004-00	CERAMIC	0.01MF		50V
C3	1-124-126-00	ELECT	47MF	20%	16V
C4	1-124-126-00	ELECT	47MF	20%	16V
C5	1-102-971-00	CERAMIC	82PF	5%	50V
C6	1-101-004-00	CERAMIC	0.01MF		50V
C7	1-101-004-00	CERAMIC	0.01MF		50V
C8	1-124-126-00	ELECT	47MF	20%	25V
C9	1-102-973-00	CERAMIC	100PF	5%	50V
C12	1-124-126-00	ELECT	47MF	20%	16V
C13	1-101-004-00	CERAMIC	0.01MF		50V
C16	1-102-973-00	CERAMIC	100PF	5%	50V
C17	1-136-153-00	FILM	0.01MF	5%	50V
C18	1-101-006-00	CERAMIC	0.047MF		50V
C19	1-136-157-00	FILM	0.022MF	5%	50V
C20	1-101-004-00	CERAMIC	0.01MF		50V
C21	1-101-006-00	CERAMIC	0.047MF		50V
C22	1-108-680-11	MYLAR	0.001MF	10%	200V
C23	1-124-798-11	ELECT	1MF	20%	160V
C24	1-124-634-11	ELECT	1MF	20%	450V
C101	1-126-103-11	ELECT	470MF	20%	16V
C102	1-126-103-11	ELECT	470MF	20%	16V
C103	1-101-004-00	CERAMIC	0.01MF		50V
C104	1-101-004-00	CERAMIC	0.01MF		50V

REF. NO.	PART NO.	DESCRIPTION				REMARK
C105	1-126-101-11	ELECT	100MF	20%	16V	
C106	1-126-101-11	ELECT	100MF	20%	16V	
C107	1-126-101-11	ELECT	100MF	20%	16V	
C108	1-126-101-11	ELECT	100MF	20%	16V	
C109	1-101-004-00	CERAMIC	0.01MF		50V	
C110	1-101-004-00	CERAMIC	0.01MF		50V	
C111	1-101-004-00	CERAMIC	0.01MF		50V	
C113	1-126-101-11	ELECT	100MF	20%	16V	
C114	1-101-004-00	CERAMIC	0.01MF		50V	
C116	1-101-004-00	CERAMIC	0.01MF		50V	
C118	1-126-101-11	ELECT	100MF	20%	16V	
C120	1-101-004-00	CERAMIC	0.01MF		50V	
C121	1-101-004-00	CERAMIC	0.01MF		50V	
C122	1-126-101-11	ELECT	100MF	20%	16V	
C123	1-126-101-11	ELECT	100MF	20%	16V	
C124	1-101-004-00	CERAMIC	0.01MF		50V	
C125	1-101-004-00	CERAMIC	0.01MF		50V	
C126	1-101-004-00	CERAMIC	0.01MF		50V	
C127	1-101-004-00	CERAMIC	0.01MF		50V	
C128	1-126-101-11	ELECT	100MF	20%	16V	
C129	1-126-101-11	ELECT	100MF	20%	16V	
C130	1-101-004-00	CERAMIC	0.01MF		50V	
C131	1-101-004-00	CERAMIC	0.01MF		50V	
C134	1-124-046-00	ELECT	10MF	20%	160V	
C136	1-108-692-11	MYLAR	0.01MF	10%	200V	
C137	1-124-046-00	ELECT	10MF	20%	160V	
C138	1-124-046-00	ELECT	10MF	20%	160V	
C139	1-108-692-11	MYLAR	0.01MF	10%	200V	
C140	1-124-046-00	ELECT	10MF	20%	160V	
C141	1-108-692-11	MYLAR	0.01MF	10%	200V	
C202	1-101-004-00	CERAMIC	0.01MF		50V	
C203	1-124-126-00	ELECT	47MF	20%	16V	
C204	1-124-126-00	ELECT	47MF	20%	16V	
C205	1-102-971-00	CERAMIC	82PF	5%	50V	
C206	1-101-004-00	CERAMIC	0.01MF		50V	
C207	1-101-004-00	CERAMIC	0.01MF		50V	
C208	1-124-126-00	ELECT	47MF	20%	25V	
C209	1-102-973-00	CERAMIC	100PF	5%	50V	
C212	1-124-126-00	ELECT	47MF	20%	16V	
C213	1-101-004-00	CERAMIC	0.01MF		50V	
C216	1-102-973-00	CERAMIC	100PF	5%	50V	
C217	1-136-153-00	FILM	0.01MF	5%	50V	
C218	1-101-006-00	CERAMIC	0.047MF		50V	
C219	1-136-157-00	FILM	0.022MF	5%	50V	
C220	1-101-004-00	CERAMIC	0.01MF		50V	
C221	1-101-006-00	CERAMIC	0.047MF		50V	
C222	1-108-680-11	MYLAR	0.001MF	10%	200V	
C223	1-124-798-11	ELECT	1MF	20%	160V	
C224	1-124-634-11	ELECT	1MF	20%	450V	
C301	1-126-103-11	ELECT	470MF	20%	16V	
C302	1-126-103-11	ELECT	470MF	20%	16V	
C303	1-101-004-00	CERAMIC	0.01MF		50V	
C304	1-101-004-00	CERAMIC	0.01MF		50V	
C305	1-126-101-11	ELECT	100MF	20%	16V	
C306	1-126-101-11	ELECT	100MF	20%	16V	
C307	1-126-101-11	ELECT	100MF	20%	16V	
C308	1-126-101-11	ELECT	100MF	20%	16V	
C309	1-101-004-00	CERAMIC	0.01MF		50V	
C310	1-101-004-00	CERAMIC	0.01MF		50V	
C311	1-101-004-00	CERAMIC	0.01MF		50V	
C313	1-126-101-11	ELECT	100MF	20%	16V	
C314	1-101-004-00	CERAMIC	0.01MF		50V	
C316	1-101-004-00	CERAMIC	0.01MF		50V	
C318	1-126-101-11	ELECT	100MF	20%	16V	
C320	1-101-004-00	CERAMIC	0.01MF		50V	
C321	1-101-004-00	CERAMIC	0.01MF		50V	

REF. NO.	PART NO.	DESCRIPTION				REMARK
C322	1-126-101-11	ELECT	100MF	20%	16V	
C323	1-126-101-11	ELECT	100MF	20%	16V	
C324	1-101-004-00	CERAMIC	0.01MF		50V	
C325	1-101-004-00	CERAMIC	0.01MF		50V	
C326	1-101-004-00	CERAMIC	0.01MF		50V	
C327	1-101-004-00	CERAMIC	0.01MF		50V	
C328	1-126-101-11	ELECT	100MF	20%	16V	
C329	1-126-101-11	ELECT	100MF	20%	16V	
C330	1-101-004-00	CERAMIC	0.01MF		50V	
C331	1-101-004-00	CERAMIC	0.01MF		50V	
C334	1-124-046-00	ELECT	10MF	20%	160V	
C336	1-108-692-11	MYLAR	0.01MF	10%	200V	
C337	1-124-046-00	ELECT	10MF	20%	160V	
C338	1-124-046-00	ELECT	10MF	20%	160V	
C339	1-108-692-11	MYLAR	0.01MF	10%	200V	
C340	1-124-046-00	ELECT	10MF	20%	160V	
C341	1-108-692-11	MYLAR	0.01MF	10%	200V	
C402	1-101-004-00	CERAMIC	0.01MF		50V	
C403	1-124-126-00	ELECT	47MF	20%	16V	
C404	1-124-126-00	ELECT	47MF	20%	16V	
C405	1-102-971-00	CERAMIC	82PF	5%	50V	
C406	1-101-004-00	CERAMIC	0.01MF		50V	
C407	1-101-004-00	CERAMIC	0.01MF		50V	
C408	1-124-126-00	ELECT	47MF	20%	25V	
C409	1-102-973-00	CERAMIC	100PF	5%	50V	
C412	1-124-126-00	ELECT	47MF	20%	16V	
C413	1-101-004-00	CERAMIC	0.01MF		50V	
C416	1-102-973-00	CERAMIC	100PF	5%	50V	
C417	1-136-153-00	FILM	0.01MF	5%	50V	
C418	1-101-006-00	CERAMIC	0.047MF		50V	
C419	1-136-157-00	FILM	0.022MF	5%	50V	
C420	1-101-004-00	CERAMIC	0.01MF		50V	
C421	1-101-006-00	CERAMIC	0.047MF		50V	
C422	1-108-680-11	MYLAR	0.001MF	10%	200V	
C423	1-124-798-11	ELECT	1MF	20%	160V	
C424	1-124-634-11	ELECT	1MF	20%	450V	
C501	1-126-103-11	ELECT	470MF	20%	16V	
C502	1-126-103-11	ELECT	470MF	20%	16V	
C503	1-101-004-00	CERAMIC	0.01MF		50V	
C504	1-101-004-00	CERAMIC	0.01MF		50V	
C505	1-126-101-11	ELECT	100MF	20%	16V	
C506	1-126-101-11	ELECT	100MF	20%	16V	
C507	1-126-101-11	ELECT	100MF	20%	16V	
C508	1-126-101-11	ELECT	100MF	20%	16V	
C509	1-101-004-00	CERAMIC	0.01MF		50V	
C510	1-101-004-00	CERAMIC	0.01MF		50V	
C511	1-101-004-00	CERAMIC	0.01MF		50V	
C513	1-126-101-11	ELECT	100MF	20%	16V	
C514	1-101-004-00	CERAMIC	0.01MF		50V	
C516	1-101-004-00	CERAMIC	0.01MF		50V	
C518	1-126-101-11	ELECT	100MF	20%	16V	
C520	1-101-004-00	CERAMIC	0.01MF		50V	
C521	1-101-004-00	CERAMIC	0.01MF		50V	
C522	1-126-101-11	ELECT	100MF	20%	16V	
C523	1-126-101-11	ELECT	100MF	20%	16V	
C524	1-101-004-00	CERAMIC	0.01MF		50V	
C525	1-101-004-00	CERAMIC	0.01MF		50V	
C526	1-101-004-00	CERAMIC	0.01MF		50V	
C527	1-101-004-00	CERAMIC	0.01MF		50V	
C528	1-126-101-11	ELECT	100MF	20%	16V	
C529	1-126-101-11	ELECT	100MF	20%	16V	
C530	1-101-004-00	CERAMIC	0.01MF		50V	
C531	1-101-004-00	CERAMIC	0.01MF		50V	
C534	1-124-046-00	ELECT	10MF	20%	160V	
C536	1-108-692-11	MYLAR	0.01MF	10%	200V	
C537	1-124-046-00	ELECT	10MF	20%	160V	
C538	1-124-046-00	ELECT	10MF	20%	160V	
C539	1-108-692-11	MYLAR	0.01MF	10%	200V	
C540	1-124-046-00	ELECT	10MF	20%	160V	
C541	1-108-692-11	MYLAR	0.01MF	10%	200V	
C601	1-102-944-00	CERAMIC	7PF	0.5PF	50V	
C602	1-126-101-11	ELECT	100MF	20%	16V	
C603	1-123-356-00	ELECT	10MF	20%	16V	
C604	1-123-356-00	ELECT	10MF	20%	16V	
C605	1-123-356-00	ELECT	10MF	20%	16V	
C606	1-124-126-00	ELECT	47MF	20%	16V	
C607	1-101-004-00	CERAMIC	0.01MF		50V	
C701	1-126-103-11	ELECT	470MF	20%	16V	
C703	1-101-004-00	CERAMIC	0.01MF		50V	
C704	1-101-004-00	CERAMIC	0.01MF		50V	
C705	1-126-101-11	ELECT	100MF	20%	16V	
C706	1-126-101-11	ELECT	100MF	20%	16V	
C738	1-124-046-00	ELECT	10MF	20%	160V	
C739	1-108-692-11	MYLAR	0.01MF	10%	200V	
C740	1-124-046-00	ELECT	10MF	20%	160V	

<CONNECTOR>

CA1	*1-566-057-11	PIN, CONNECTOR 5P
CA2	*1-566-057-11	PIN, CONNECTOR 5P
CA3	*1-566-057-11	PIN, CONNECTOR 5P
CA4	*1-566-055-11	PIN, CONNECTOR 3P
CA5	*1-566-060-11	PIN, CONNECTOR 8P
CA6	*1-566-054-11	PIN, CONNECTOR 2P
CA7	*1-566-054-11	PIN, CONNECTOR 2P
CA8	*1-566-057-11	PIN, CONNECTOR 5P
CA9	*1-566-056-11	PIN, CONNECTOR 4P
CA10	*1-566-056-11	PIN, CONNECTOR 4P
CA11	*1-566-056-11	PIN, CONNECTOR 4P
CA12	*1-508-784-00	PIN, CONNECTOR (5MM PITCH) 1P
CA13	*1-508-784-00	PIN, CONNECTOR (5MM PITCH) 1P
CA14	*1-508-784-00	PIN, CONNECTOR (5MM PITCH) 1P

<TRIMMER>

CV1	1-141-181-11	CAP, TRIMMER
CV2	1-141-181-11	CAP, TRIMMER
CV201	1-141-181-11	CAP, TRIMMER
CV202	1-141-181-11	CAP, TRIMMER
CV401	1-141-181-11	CAP, TRIMMER
CV402	1-141-181-11	CAP, TRIMMER

<DIODE>

D1	8-719-110-12	DIODE RD9.1ES-B1
D2	8-719-911-19	DIODE 1SS119
D3	8-719-911-19	DIODE 1SS119
D4	8-719-110-22	DIODE RD11ES-B2
D5	8-719-901-83	DIODE 1SS83
D6	8-719-901-83	DIODE 1SS83
D7	8-719-911-19	DIODE 1SS119
D8	8-719-911-19	DIODE 1SS119
D10	8-719-911-19	DIODE 1SS119
D12	8-719-911-19	DIODE 1SS119
D13	8-719-911-19	DIODE 1SS119
D15	8-719-971-20	DIODE ERC38-06
D201	8-719-110-12	DIODE RD9.1ES-B1
D202	8-719-911-19	DIODE 1SS119
D203	8-719-911-19	DIODE 1SS119
D204	8-719-110-22	DIODE RD11ES-B2
D205	8-719-901-83	DIODE 1SS83
D206	8-719-901-83	DIODE 1SS83

CA

REF. NO.	PART NO.	DESCRIPTION	REMARK
D207	8-719-911-19	DIODE 1SS119	
D208	8-719-911-19	DIODE 1SS119	
D209	8-719-911-19	DIODE 1SS119	
D210	8-719-911-19	DIODE 1SS119	
D213	8-719-911-19	DIODE 1SS119	
D215	8-719-971-20	DIODE ERC38-06	
D401	8-719-110-12	DIODE RD9.1ES-B1	
D402	8-719-911-19	DIODE 1SS119	
D403	8-719-911-19	DIODE 1SS119	
D404	8-719-110-22	DIODE RD11ES-B2	
D405	8-719-901-83	DIODE 1SS83	
D406	8-719-901-83	DIODE 1SS83	
D407	8-719-911-19	DIODE 1SS119	
D408	8-719-911-19	DIODE 1SS119	
D409	8-719-911-19	DIODE 1SS119	
D410	8-719-911-19	DIODE 1SS119	
D413	8-719-911-19	DIODE 1SS119	
D415	8-719-971-20	DIODE ERC38-06	
D601	8-719-109-96	DIODE RD6.8ES-B1	
D602	8-719-901-83	DIODE 1SS83	
D603	8-719-911-19	DIODE 1SS119	
		<IC>	
IC2	8-759-990-82	IC TL082CP	
IC3	8-759-990-82	IC TL082CP	
IC4	8-759-040-53	IC MC14053BCP	
IC202	8-759-990-82	IC TL082CP	
IC203	8-759-990-82	IC TL082CP	
IC204	8-759-040-53	IC MC14053BCP	
IC402	8-759-990-82	IC TL082CP	
IC403	8-759-990-82	IC TL082CP	
IC404	8-759-040-53	IC MC14053BCP	
		<JACK>	
J1	*1-526-575-00	SOCKET, PLUG 1P	
J201	*1-526-575-00	SOCKET, PLUG 1P	
J401	*1-526-575-00	SOCKET, PLUG 1P	
		<COIL>	
L1	1-410-503-41	INDUCTOR 3.3UH	
L101	1-408-231-00	INDUCTOR 1MMH	
L102	1-408-231-00	INDUCTOR 1MMH	
L103	1-408-096-00	INDUCTOR 470UH	
L104	1-408-096-00	INDUCTOR 470UH	
L201	1-410-503-41	INDUCTOR 3.3UH	
L301	1-408-231-00	INDUCTOR 1MMH	
L302	1-408-231-00	INDUCTOR 1MMH	
L303	1-408-096-00	INDUCTOR 470UH	
L304	1-408-096-00	INDUCTOR 470UH	
L401	1-410-503-41	INDUCTOR 3.3UH	
L501	1-408-231-00	INDUCTOR 1MMH	
L502	1-408-231-00	INDUCTOR 1MMH	
L503	1-408-096-00	INDUCTOR 470UH	
L504	1-408-096-00	INDUCTOR 470UH	
L601	1-408-415-00	INDUCTOR 33UH	
L701	1-408-231-00	INDUCTOR 1MMH	
L704	1-408-096-00	INDUCTOR 470UH	
		<TRANSISTOR>	
Q1	8-729-105-88	TRANSISTOR 2SC2570A	
Q2	8-729-802-37	TRANSISTOR 2SC3595-D	
Q3	8-729-105-88	TRANSISTOR 2SC2570A	
Q4	8-729-103-19	TRANSISTOR 2SA1206-K1	
Q5	8-729-802-37	TRANSISTOR 2SC3595-D	
Q6	8-729-805-05	TRANSISTOR 2SC3601-E	
Q7	8-729-804-58	TRANSISTOR 2SC3600-E	
Q8	8-729-804-63	TRANSISTOR 2SA1406-E	
Q9	8-729-802-37	TRANSISTOR 2SC3595-D	
Q10	8-729-802-44	TRANSISTOR 2SK125-4	
Q11	8-729-802-44	TRANSISTOR 2SK125-4	
Q12	8-729-802-44	TRANSISTOR 2SK125-4	
Q13	8-729-255-12	TRANSISTOR 2SC2551-O	
Q14	8-729-805-05	TRANSISTOR 2SC3601-E	
Q15	8-729-802-71	TRANSISTOR 2SA1407-D	
Q17	8-729-802-44	TRANSISTOR 2SK125-4	
Q18	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q19	8-729-820-82	TRANSISTOR 2SA1208-S	
Q20	8-729-820-82	TRANSISTOR 2SA1208-S	
Q23	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q201	8-729-105-88	TRANSISTOR 2SC2570A	
Q202	8-729-802-37	TRANSISTOR 2SC3595-D	
Q203	8-729-105-88	TRANSISTOR 2SC2570A	
Q204	8-729-103-19	TRANSISTOR 2SA1206-K1	
Q205	8-729-802-37	TRANSISTOR 2SC3595-D	
Q206	8-729-805-05	TRANSISTOR 2SC3601-E	
Q207	8-729-804-58	TRANSISTOR 2SC3600-E	
Q208	8-729-804-63	TRANSISTOR 2SA1406-E	
Q209	8-729-802-37	TRANSISTOR 2SC3595-D	
Q210	8-729-802-44	TRANSISTOR 2SK125-4	
Q211	8-729-802-44	TRANSISTOR 2SK125-4	
Q212	8-729-802-44	TRANSISTOR 2SK125-4	
Q213	8-729-255-12	TRANSISTOR 2SC2551-O	
Q214	8-729-805-05	TRANSISTOR 2SC3601-E	
Q215	8-729-802-71	TRANSISTOR 2SA1407-D	
Q217	8-729-802-44	TRANSISTOR 2SK125-4	
Q218	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q219	8-729-820-82	TRANSISTOR 2SA1208-S	
Q220	8-729-820-82	TRANSISTOR 2SA1208-S	
Q223	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q401	8-729-105-88	TRANSISTOR 2SC2570A	
Q402	8-729-802-37	TRANSISTOR 2SC3595-D	
Q403	8-729-105-88	TRANSISTOR 2SC2570A	
Q404	8-729-103-19	TRANSISTOR 2SA1206-K1	
Q405	8-729-802-37	TRANSISTOR 2SC3595-D	
Q406	8-729-805-05	TRANSISTOR 2SC3601-E	
Q407	8-729-804-58	TRANSISTOR 2SC3600-E	
Q408	8-729-804-63	TRANSISTOR 2SA1406-E	
Q409	8-729-802-37	TRANSISTOR 2SC3595-D	
Q410	8-729-802-44	TRANSISTOR 2SK125-4	
Q411	8-729-802-44	TRANSISTOR 2SK125-4	
Q412	8-729-802-44	TRANSISTOR 2SK125-4	
Q413	8-729-255-12	TRANSISTOR 2SC2551-O	
Q414	8-729-805-05	TRANSISTOR 2SC3601-E	
Q415	8-729-802-71	TRANSISTOR 2SA1407-D	
Q417	8-729-802-44	TRANSISTOR 2SK125-4	
Q418	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q419	8-729-820-82	TRANSISTOR 2SA1208-S	
Q420	8-729-820-82	TRANSISTOR 2SA1208-S	
Q423	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q601	8-729-105-88	TRANSISTOR 2SC2570A	
Q602	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q603	8-729-105-88	TRANSISTOR 2SC2570A	
Q604	8-729-105-88	TRANSISTOR 2SC2570A	
Q605	8-729-105-88	TRANSISTOR 2SC2570A	
Q606	8-729-802-37	TRANSISTOR 2SC3595-D	
Q607	8-729-805-05	TRANSISTOR 2SC3601-E	
Q608	8-729-805-05	TRANSISTOR 2SC3601-E	
Q609	8-729-802-71	TRANSISTOR 2SA1407-D	

<RESISTOR>

REF. NO.	PART NO.	DESCRIPTION				REMARK
R1	1-214-702-00	METAL	75	1%	1/4W	
R2	1-249-405-11	CARBON	100	5%	1/4W	
R3	1-249-420-11	CARBON	1.8K	5%	1/4W	
R4	1-215-415-00	METAL	560	1%	1/6W	
R5	1-215-413-00	METAL	470	1%	1/6W	
R6	1-215-423-00	METAL	1.2K	1%	1/6W	
R7	1-215-421-00	METAL	1K	1%	1/6W	
R8	1-215-413-00	METAL	470	1%	1/6W	
R9	1-215-445-00	METAL	10K	1%	1/6W	
R10	1-249-393-11	CARBON	10	5%	1/4W	
R11	1-215-417-00	METAL	680	1%	1/6W	
R12	1-215-401-11	METAL	150	1%	1/6W	
R13	1-249-405-11	CARBON	100	5%	1/4W	
R14	1-249-397-11	CARBON	22	5%	1/4W	
R15	1-215-405-00	METAL	220	1%	1/6W	
R16	1-214-823-00	METAL	20	1%	1/2W	
R17	1-215-373-31	METAL	10	1%	1/6W	
R18	1-218-353-11	METAL	1.5K	1%	10W	
R19	1-215-421-00	METAL	1K	1%	1/6W	
R20	1-215-419-00	METAL	820	1%	1/6W	
R21	1-215-441-00	METAL	6.8K	1%	1/6W	
R22	1-249-397-11	CARBON	22	5%	1/4W	
R23	1-249-397-11	CARBON	22	5%	1/4W	
R24	1-214-826-11	METAL	27	1%	1/2W	
R26	1-215-410-00	METAL	360	1%	1/6W	
R27	1-215-401-11	METAL	150	1%	1/6W	
R28	1-249-435-11	CARBON	33K	5%	1/4W	
R29	1-249-441-11	CARBON	100K	5%	1/4W	
R30	1-249-431-11	CARBON	15K	5%	1/4W	
R31	1-249-429-11	CARBON	10K	5%	1/4W	
R32	1-249-435-11	CARBON	33K	5%	1/4W	
R33	1-249-395-11	CARBON	15	5%	1/4W	
R34	1-249-395-11	CARBON	15	5%	1/4W	
R35	1-215-449-00	METAL	15K	1%	1/6W	
R36	1-202-549-00	SOLID	100	10%	1/2W	
R37	1-215-403-00	METAL	180	1%	1/6W	
R38	1-215-401-11	METAL	150	1%	1/6W	
R40	1-215-400-11	CARBON	39	1%	1/6W	
R41	1-215-423-00	METAL	1.2K	1%	1/6W	
R42	1-215-447-00	METAL	12K	1%	1/6W	
R44	1-249-429-11	CARBON	10K	5%	1/4W	
R45	1-249-441-11	CARBON	100K	5%	1/4W	
R46	1-249-417-11	CARBON	1K	5%	1/4W	
R47	1-249-429-11	CARBON	10K	5%	1/4W	
R49	1-215-403-00	METAL	180	1%	1/6W	
R50	1-215-427-00	METAL	1.8K	1%	1/6W	
R51	1-249-433-11	CARBON	22K	5%	1/4W	
R52	1-249-421-11	CARBON	2.2K	5%	1/4W	
R53	1-249-421-11	CARBON	2.2K	5%	1/4W	
R54	1-215-433-00	METAL	3.3K	1%	1/6W	
R55	1-215-433-00	METAL	3.3K	1%	1/6W	
R56	1-215-441-00	METAL	6.8K	1%	1/6W	
R57	1-215-433-00	METAL	3.3K	1%	1/6W	
R58	1-249-429-11	CARBON	10K	5%	1/4W	
R59	1-249-426-11	CARBON	5.6K	5%	1/4W	
R60	1-249-429-11	CARBON	10K	5%	1/4W	
R61	1-249-426-11	CARBON	5.6K	5%	1/4W	
R62	1-249-397-11	CARBON	22	5%	1/4W	
R63	1-215-438-00	METAL	5.1K	1%	1/6W	
R64	1-214-908-00	METAL	62K	1%	1/2W	
R65	1-249-405-11	CARBON	100	5%	1/4W	
R66	1-249-440-11	CARBON	82K	5%	1/4W	
R67	1-247-903-00	CARBON	1M	5%	1/4W	
R68	1-249-406-11	CARBON	120	5%	1/4W	
R73	1-249-400-11	CARBON	39	5%	1/4W	
R74	1-249-400-11	CARBON	39	5%	1/4W	
R76	1-202-549-00	SOLID	100	10%	1/2W	
R80	1-215-863-11	METAL OXIDE	100	5%	1W	F
R90	1-215-863-11	METAL OXIDE	100	5%	1W	F
R91	1-215-863-11	METAL OXIDE	100	5%	1W	F
R201	1-214-702-00	METAL	75	1%	1/4W	
R202	1-249-405-11	CARBON	100	5%	1/4W	
R203	1-249-420-11	CARBON	1.8K	5%	1/4W	
R204	1-215-415-00	METAL	560	1%	1/6W	
R205	1-215-413-00	METAL	470	1%	1/6W	
R206	1-215-423-00	METAL	1.2K	1%	1/6W	
R207	1-215-421-00	METAL	1K	1%	1/6W	
R208	1-215-413-00	METAL	470	1%	1/6W	
R209	1-215-445-00	METAL	10K	1%	1/6W	
R210	1-249-393-11	CARBON	10	5%	1/4W	
R211	1-215-417-00	METAL	680	1%	1/6W	
R212	1-215-401-11	METAL	150	1%	1/6W	
R213	1-249-405-11	CARBON	100	5%	1/4W	
R214	1-249-397-11	CARBON	22	5%	1/4W	
R215	1-215-405-00	METAL	220	1%	1/6W	
R216	1-214-823-00	METAL	20	1%	1/2W	
R217	1-215-373-31	METAL	10	1%	1/6W	
R218	1-218-353-11	METAL	1.5K	1%	10W	
R219	1-215-421-00	METAL	1K	1%	1/6W	
R220	1-215-419-00	METAL	820	1%	1/6W	
R221	1-215-441-00	METAL	6.8K	1%	1/6W	
R222	1-249-397-11	CARBON	22	5%	1/4W	
R223	1-249-397-11	CARBON	22	5%	1/4W	
R224	1-214-826-11	METAL	27	1%	1/2W	
R226	1-215-410-00	METAL	360	1%	1/6W	
R227	1-215-401-11	METAL	150	1%	1/6W	
R228	1-249-435-11	CARBON	33K	5%	1/4W	
R229	1-249-441-11	CARBON	100K	5%	1/4W	
R230	1-249-431-11	CARBON	15K	5%	1/4W	
R231	1-249-429-11	CARBON	10K	5%	1/4W	
R232	1-249-435-11	CARBON	33K	5%	1/4W	
R233	1-249-395-11	CARBON	15	5%	1/4W	
R234	1-249-395-11	CARBON	15	5%	1/4W	
R235	1-215-449-00	METAL	15K	1%	1/6W	
R236	1-202-549-00	SOLID	100	10%	1/2W	
R237	1-215-403-00	METAL	180	1%	1/6W	
R238	1-215-401-11	METAL	150	1%	1/6W	
R240	1-215-400-11	CARBON	39	1%	1/6W	
R241	1-215-423-00	METAL	1.2K	1%	1/6W	
R242	1-215-447-00	METAL	12K	1%	1/6W	
R244	1-249-429-11	CARBON	10K	5%	1/4W	
R245	1-249-441-11	CARBON	100K	5%	1/4W	
R246	1-249-417-11	CARBON	1K	5%	1/4W	
R247	1-249-429-11	CARBON	10K	5%	1/4W	
R249	1-215-403-00	METAL	180	1%	1/6W	
R250	1-215-427-00	METAL	1.8K	1%	1/6W	
R251	1-249-433-11	CARBON	22K	5%	1/4W	
R252	1-249-421-11	CARBON	2.2K	5%	1/4W	
R253	1-249-421-11	CARBON	2.2K	5%	1/4W	
R254	1-215-433-00	METAL	3.3K	1%	1/6W	
R255	1-215-433-00	METAL	3.3K	1%	1/6W	
R256	1-215-441-00	METAL	6.8K	1%	1/6W	
R257	1-215-433-00	METAL	3.3K	1%	1/6W	
R258	1-249-429-11	CARBON	10K	5%	1/4W	
R259	1-249-426-11	CARBON	5.6K	5%	1/4W	
R260	1-249-429-11	CARBON	10K	5%	1/4W	
R261	1-249-426-11	CARBON	5.6K	5%	1/4W	
R262	1-249-397-11	CARBON	22	5%	1/4W	
R263	1-215-438-00	METAL	5.1K	1%	1/6W	
R264	1-214-908-00	METAL	62K	1%	1/2W	

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REF. NO.	PART NO.	DESCRIPTION				REMARK
R265	1-249-405-11	CARBON	100	5%	1/4W	
R266	1-249-440-11	CARBON	82K	5%	1/4W	
R267	1-247-903-00	CARBON	1M	5%	1/4W	
R268	1-249-406-11	CARBON	120	5%	1/4W	
R273	1-249-400-11	CARBON	39	5%	1/4W	
R274	1-249-400-11	CARBON	39	5%	1/4W	
R276	1-202-549-00	SOLID	100	10%	1/2W	
R280	1-215-863-11	METAL OXIDE	100	5%	1W	F
R290	1-215-863-11	METAL OXIDE	100	5%	1W	F
R291	1-215-863-11	METAL OXIDE	100	5%	1W	F
R401	1-214-702-00	METAL	75	1%	1/4W	
R402	1-249-405-11	CARBON	100	5%	1/4W	
R403	1-249-420-11	CARBON	1.8K	5%	1/4W	
R404	1-215-415-00	METAL	560	1%	1/6W	
R405	1-215-413-00	METAL	470	1%	1/6W	
R406	1-215-423-00	METAL	1.2K	1%	1/6W	
R407	1-215-421-00	METAL	1K	1%	1/6W	
R408	1-215-413-00	METAL	470	1%	1/6W	
R409	1-215-445-00	METAL	10K	1%	1/6W	
R410	1-249-393-11	CARBON	10	5%	1/4W	
R411	1-215-417-00	METAL	680	1%	1/6W	
R412	1-215-401-11	METAL	150	1%	1/6W	
R413	1-249-405-11	CARBON	100	5%	1/4W	
R414	1-249-397-11	CARBON	22	5%	1/4W	
R415	1-215-405-00	METAL	220	1%	1/6W	
R416	1-214-823-00	METAL	20	1%	1/2W	
R417	1-215-373-31	METAL	10	1%	1/6W	
R418	1-218-353-11	METAL	1.5K	1%	10W	
R419	1-215-421-00	METAL	1K	1%	1/6W	
R420	1-215-419-00	METAL	820	1%	1/6W	
R421	1-215-441-00	METAL	6.8K	1%	1/6W	
R422	1-249-397-11	CARBON	22	5%	1/4W	
R423	1-249-397-11	CARBON	22	5%	1/4W	
R424	1-214-826-11	METAL	27	1%	1/2W	
R426	1-215-410-00	METAL	360	1%	1/6W	
R427	1-215-401-11	METAL	150	1%	1/6W	
R428	1-249-435-11	CARBON	33K	5%	1/4W	
R429	1-249-441-11	CARBON	100K	5%	1/4W	
R430	1-249-431-11	CARBON	15K	5%	1/4W	
R431	1-249-429-11	CARBON	10K	5%	1/4W	
R432	1-249-435-11	CARBON	33K	5%	1/4W	
R433	1-249-395-11	CARBON	15	5%	1/4W	
R434	1-249-395-11	CARBON	15	5%	1/4W	
R435	1-215-449-00	METAL	15K	1%	1/6W	
R436	1-202-549-00	SOLID	100	10%	1/2W	
R437	1-215-403-00	METAL	180	1%	1/6W	
R438	1-215-401-11	METAL	150	1%	1/6W	
R440	1-249-400-00	CARBON	39	1%	1/6W	
R441	1-215-423-00	METAL	1.2K	1%	1/6W	
R442	1-215-447-00	METAL	12K	1%	1/6W	
R444	1-249-429-11	CARBON	10K	5%	1/4W	
R445	1-249-441-11	CARBON	100K	5%	1/4W	
R446	1-249-417-11	CARBON	1K	5%	1/4W	
R447	1-249-429-11	CARBON	10K	5%	1/4W	
R449	1-215-403-00	METAL	180	1%	1/6W	
R450	1-215-427-00	METAL	1.8K	1%	1/6W	
R451	1-249-433-11	CARBON	22K	5%	1/4W	
R452	1-249-421-11	CARBON	2.2K	5%	1/4W	
R453	1-249-421-11	CARBON	2.2K	5%	1/4W	
R454	1-215-433-00	METAL	3.3K	1%	1/6W	
R455	1-215-433-00	METAL	3.3K	1%	1/6W	
R456	1-215-441-00	METAL	6.8K	1%	1/6W	
R457	1-215-433-00	METAL	3.3K	1%	1/6W	
R458	1-249-429-11	CARBON	10K	5%	1/4W	
R459	1-249-426-11	CARBON	5.6K	5%	1/4W	
R460	1-249-429-11	CARBON	10K	5%	1/4W	
R461	1-249-426-11	CARBON	5.6K	5%	1/4W	
R462	1-249-397-11	CARBON	22	5%	1/4W	
R463	1-215-438-00	METAL	5.1K	1%	1/6W	
R464	1-214-908-00	METAL	62K	1%	1/2W	
R465	1-249-405-11	CARBON	100	5%	1/4W	
R466	1-249-440-11	CARBON	82K	5%	1/4W	
R467	1-247-903-00	CARBON	1M	5%	1/4W	
R468	1-249-406-11	CARBON	120	5%	1/4W	
R473	1-249-400-11	CARBON	39	5%	1/4W	
R474	1-249-400-11	CARBON	39	5%	1/4W	
R476	1-202-549-00	SOLID	100	10%	1/2W	
R480	1-215-863-11	METAL OXIDE	100	5%	1W	F
R490	1-215-863-11	METAL OXIDE	100	5%	1W	F
R491	1-215-863-11	METAL OXIDE	100	5%	1W	F
R601	1-249-430-11	CARBON	12K	5%	1/4W	
R602	1-249-427-11	CARBON	6.8K	5%	1/4W	
R603	1-249-434-11	CARBON	27K	5%	1/4W	
R604	1-249-421-11	CARBON	2.2K	5%	1/4W	
R605	1-249-441-11	CARBON	100K	5%	1/4W	
R606	1-249-405-11	CARBON	100	5%	1/4W	
R607	1-249-405-11	CARBON	100	5%	1/4W	
R608	1-215-435-00	METAL	3.9K	1%	1/6W	
R609	1-215-413-00	METAL	470	1%	1/6W	
R610	1-249-405-11	CARBON	100	5%	1/4W	
R611	1-215-429-00	METAL	2.2K	1%	1/6W	
R612	1-215-421-00	METAL	1K	1%	1/6W	
R613	1-249-413-11	CARBON	470	5%	1/4W	
R614	1-249-405-11	CARBON	100	5%	1/4W	
R615	1-249-405-11	CARBON	100	5%	1/4W	
R616	1-249-405-11	CARBON	100	5%	1/4W	
R617	1-215-920-11	METAL OXIDE	3.3K	5%	3W	F
R618	1-249-427-11	CARBON	6.8K	5%	1/4W	
R619	1-215-902-11	METAL OXIDE	47K	5%	1W	F
R620	1-215-441-00	METAL	6.8K	1%	1/6W	

<VARIABLE RESISTOR>

RV1	1-237-518-21	RES, ADJ, CERMET	10K
RV2	1-237-519-21	RES, ADJ, CERMET	20K
RV201	1-237-518-21	RES, ADJ, CERMET	10K
RV202	1-237-519-21	RES, ADJ, CERMET	20K
RV401	1-237-518-21	RES, ADJ, CERMET	10K
RV402	1-237-519-21	RES, ADJ, CERMET	20K

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*A-1311-227-A	G BOARD, COMPLETE	
	**********	
*4-363-404-00	HOLDER, IC	

<CAPACITOR>

C1	1-124-046-00	ELECT	10MF	20%	160V
C2	1-124-120-11	ELECT	220MF	20%	25V
C3	1-124-120-11	ELECT	220MF	20%	25V
C4	1-124-120-11	ELECT	220MF	20%	25V
C5	1-124-120-11	ELECT	220MF	20%	25V
C6	1-124-046-00	ELECT	10MF	20%	160V
C7	1-124-120-11	ELECT	220MF	20%	25V
C8	1-124-120-11	ELECT	220MF	20%	25V
C9	1-124-120-11	ELECT	220MF	20%	25V
C10	1-124-120-11	ELECT	220MF	20%	25V
C11	1-124-478-11	ELECT	100MF	20%	25V
C12	1-126-103-11	ELECT	470MF	20%	16V
C13	1-126-103-11	ELECT	470MF	20%	16V
C14	1-130-483-00	MYLAR	0.01MF	5%	50V

REF. NO.	PART NO.	DESCRIPTION				REMARK
C15	1-124-046-00	ELECT	10MF	20%	160V	
C101	1-124-477-11	ELECT	47MF	20%	25V	
C102	1-124-477-11	ELECT	47MF	20%	25V	
C103	1-124-477-11	ELECT	47MF	20%	25V	
		<DIODE>				
D1	8-719-971-20	DIODE ERC38-06				
D2	8-719-911-19	DIODE 1SS119				
D3	8-719-971-20	DIODE ERC38-06				
D4	8-719-971-20	DIODE ERC38-06				
D5	8-719-971-20	DIODE ERC38-06				
D6	8-719-971-20	DIODE ERC38-06				
D7	8-719-971-20	DIODE ERC38-06				
D101	8-719-109-93	DIODE RD6.2ES-B2				
D102	8-719-911-19	DIODE 1SS119				
D103	8-719-109-93	DIODE RD6.2ES-B2				
		<CONNECTOR>				
G1	*1-566-059-11	PIN, CONNECTOR 7P				
G2	*1-566-059-11	PIN, CONNECTOR 7P				
G3	*1-566-054-11	PIN, CONNECTOR 2P				
G4	*1-566-055-11	PIN, CONNECTOR 3P				
G5	*1-566-057-11	PIN, CONNECTOR 5P				
G6	*1-566-059-11	PIN, CONNECTOR 7P				
G7	*1-566-055-11	PIN, CONNECTOR 3P				
G9	*1-566-057-11	PIN, CONNECTOR 5P				
G11	*1-566-054-11	PIN, CONNECTOR 2P				
G13	*1-566-055-11	PIN, CONNECTOR 3P				
G14	*1-566-054-11	PIN, CONNECTOR 2P				
		<IC>				
IC1	8-759-929-62	IC LM7812CT				
IC2	8-759-982-40	IC RC7912FA				
IC3	8-759-929-62	IC LM7812CT				
IC4	8-759-982-40	IC RC7912FA				
IC5	8-759-924-12	IC LM7805CT				
		<TRANSISTOR>				
Q1	8-729-900-36	TRANSISTOR DTC124ES				
Q2	8-729-900-63	TRANSISTOR DTA124ES				
Q3	8-729-304-26	TRANSISTOR 2SC3263-O				
	4-363-414-00	SPACER, MICA;Q3				
Q4	8-729-140-50	TRANSISTOR 2SC3209LK				
Q101	8-729-306-92	TRANSISTOR 2SD669A-C				
Q102	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q103	8-729-304-92	TRANSISTOR 2SB649A-C				
Q104	8-729-304-92	TRANSISTOR 2SB649A-C				
Q105	8-729-119-78	TRANSISTOR 2SC2785-HFE				
		<RESISTOR>				
R1	1-249-425-11	CARBON	4.7K	5%	1/4W	
R2	1-249-405-11	CARBON	100	5%	1/4W	
R3	1-249-417-11	CARBON	1K	5%	1/4W	
R4	1-249-417-11	CARBON	1K	5%	1/4W	
R8	1-216-436-00	METAL OXIDE	3.9K	5%	1W	F
R9	1-215-902-11	METAL OXIDE	47K	5%	1W	F
R10	1-207-959-00	WIREWOUND	10	10%	7W	F
R101	1-215-882-00	METAL OXIDE	22	5%	2W	F
R102	1-249-425-11	CARBON	4.7K	5%	1/4W	
R103	1-249-429-11	CARBON	10K	5%	1/4W	
R104	1-249-429-11	CARBON	10K	5%	1/4W	
R105	1-249-412-11	CARBON	390	5%	1/4W	
R106	1-215-906-11	METAL OXIDE	15	5%	3W	F
R107	1-215-866-11	METAL OXIDE	330	5%	1W	F
R108	1-249-437-11	CARBON	47K	5%	1/4W	
R109	1-215-882-00	METAL OXIDE	22	5%	2W	F
R111	1-249-429-11	CARBON	10K	5%	1/4W	
R112	1-249-429-11	CARBON	10K	5%	1/4W	
R113	1-249-429-11	CARBON	10K	5%	1/4W	
R114	1-249-412-11	CARBON	390	5%	1/4W	

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*1-617-465-11 CB BOARD
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1-526-767-00 SOCKET, PICTURE TUBE
1-556-880-81 LEAD ASSY, HIGH-VOLTAGE

<CAPACITOR>

C1	1-102-316-00	CERAMIC	15PF	5%	500V
C2	1-102-316-00	CERAMIC	15PF	5%	500V
C3	1-102-316-00	CERAMIC	15PF	5%	500V
C4	1-162-114-00	CERAMIC	0.0047MF	10%	2KV

<CONNECTOR>

CB1	*1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P
CB2	*1-508-784-00	PIN, CONNECTOR (5MM PITCH) 1P
CB4	*1-566-056-11	PIN, CONNECTOR 4P
CB5	*1-566-056-11	PIN, CONNECTOR 4P
CB6	*1-566-056-11	PIN, CONNECTOR 4P
CB7	*1-566-055-11	PIN, CONNECTOR 3P
CB8	*1-566-054-11	PIN, CONNECTOR 2P

<COIL>

L1	1-408-108-00	INDUCTOR	1.8UH
L2	1-408-108-00	INDUCTOR	1.8UH
L3	1-408-108-00	INDUCTOR	1.8UH

<NEON LAMP>

NL1	1-519-013-13	DISCHARGE TUBE
NL2	1-519-013-13	DISCHARGE TUBE
NL3	1-519-013-13	DISCHARGE TUBE
NL4	1-519-013-13	DISCHARGE TUBE
NL5	1-519-013-13	DISCHARGE TUBE
NL6	1-519-013-13	DISCHARGE TUBE

<RESISTOR>

R1	1-247-706-11	SOLID	330	10%	1/4W
R2	1-247-706-11	SOLID	330	10%	1/4W
R3	1-247-706-11	SOLID	330	10%	1/4W
R4	1-246-477-15	SOLID	1.5K	5%	1/4W
R5	1-246-477-15	SOLID	1.5K	5%	1/4W
R6	1-246-477-15	SOLID	1.5K	5%	1/4W
R7	1-246-543-00	SOLID	820K	10%	1/4W
R9	1-202-838-00	SOLID	100K	10%	1/2W
R10	1-202-525-00	SOLID	10	10%	1/2W
R12	1-247-694-11	SOLID	33	10%	1/4W
R13	1-247-694-11	SOLID	33	10%	1/4W
R14	1-247-694-11	SOLID	33	10%	1/4W

<SPARK GAP>

SG1	1-519-063-99	DISCHARGING GAP

E

REF. NO.	PART NO.	DESCRIPTION				REMARK
	*A-1345-895-A	E BOARD, COMPLETE				
		**********				
	1-535-570-11	PIN, TERMINAL				
	3-701-609-00	BUSHING (B), TR				
	*4-028-047-01	HEAT SINK, CLIP TYPE				
	4-303-844-00	SPACER, MICA (4) MD-17				
	*4-304-469-00	HOLDER				
	*4-363-147-00	HEAT SINK, H.PIN				
	*4-363-404-00	HOLDER, IC				
	4-363-414-00	SPACER, MICA				
	*4-373-965-01	INSULATOR (SMALL)				
	*4-373-966-01	INSULATOR (LARGE)				
		<CAPACITOR>				
C1	1-126-103-11	ELECT	470MF	20%	16V	
C2	1-123-024-21	ELECT	33MF		160V	
C3	1-124-126-00	ELECT	47MF	20%	25V	
C4	1-102-125-00	CERAMIC	0.0047MF	10%	50V	
C5	1-102-824-00	CERAMIC	470PF	5%	50V	
C6	1-108-690-11	MYLAR	0.0068MF	10%	200V	
C7	1-124-046-00	ELECT	10MF		160V	
C8	1-102-030-00	CERAMIC	330PF	10%	500V	
C9	1-136-165-00	FILM	0.1MF	5%	50V	
C10	1-136-070-00	FILM	0.005MF	3%	2KV	
C11	1-136-076-00	FILM	0.0085MF	3%	2KV	
C12	1-124-046-00	ELECT	10MF		160V	
C13	1-126-101-11	ELECT	100MF	20%	16V	
C14	1-126-101-11	ELECT	100MF	20%	16V	
C15	1-108-626-11	MYLAR	0.01MF	10%	100V	
C16	1-136-541-11	FILM	1.5MF	5%	200V	
C17	1-136-155-00	FILM	0.015MF	5%	50V	
C18	1-136-153-00	FILM	0.01MF	5%	50V	
C19	1-102-030-00	CERAMIC	330PF	10%	500V	
C20	1-136-111-00	FILM	1MF	5%	200V	
C21	1-136-161-00	FILM	0.047MF	5%	50V	
C22	1-126-105-11	ELECT	1000MF	20%	35V	
C23	1-124-799-11	ELECT	2.2MF	20%	160V	
C24	1-108-690-11	MYLAR	0.0068MF	10%	200V	
C25	1-136-108-00	FILM	0.43MF	5%	200V	
C26	1-126-105-11	ELECT	1000MF	20%	35V	
C27	1-123-947-00	ELECT	10MF	20%	250V	
C28	1-126-174-51	ELECT	10MF	20%	350V	
C29	1-108-688-11	MYLAR	0.0047MF	10%	200V	
C30	1-162-115-00	CERAMIC	330PF	10%	2KV	
C31	1-124-046-00	ELECT	10MF		160V	
C32	1-124-126-00	ELECT	47MF	20%	25V	
C33	1-123-875-11	ELECT	10MF	20%	50V	
C34	1-123-875-11	ELECT	10MF	20%	50V	
C35	1-126-542-11	ELECT	4.7MF	20%	160V	
C36	1-102-973-00	CERAMIC	100PF	5%	50V	
C37	1-108-634-11	MYLAR	0.047MF	10%	100V	
C38	1-102-947-00	CERAMIC	10PF	0.5PF	50V	
C39	1-124-912-11	ELECT	330MF	20%	50V	
C40	1-124-912-11	ELECT	330MF	20%	50V	
C41	1-101-004-00	CERAMIC	0.01MF		50V	
C42	1-130-471-00	MYLAR	0.001MF	5%	50V	
C43	1-136-161-00	FILM	0.047MF	5%	50V	
C44	1-126-103-11	ELECT	470MF	20%	16V	
C45	1-102-228-00	CERAMIC	470PF	10%	500V	
C46	1-102-038-00	CERAMIC	0.001MF		500V	
C47	1-136-080-00	FILM	0.011MF	3%	2KV	
C48	1-136-111-00	FILM	1MF	5%	200V	
C49	1-136-161-00	FILM	0.047MF	5%	50V	
C50	1-136-111-00	FILM	1MF	5%	200V	
C51	1-123-024-21	ELECT	33MF		160V	
C52	1-126-103-11	ELECT	470MF	20%	16V	
C53	1-124-634-11	ELECT	1MF	20%	450V	
C54	1-124-798-11	ELECT	1MF	20%	160V	
C55	1-124-798-11	ELECT	1MF	20%	160V	
C56	1-130-473-00	MYLAR	0.0015MF	5%	50V	
C57	1-136-153-00	FILM	0.01MF	5%	50V	
C58	1-124-126-00	ELECT	47MF	20%	25V	
C59	1-130-479-00	MYLAR	0.0047MF	5%	50V	
C60	1-136-165-00	FILM	0.1MF	5%	50V	
C61	1-101-004-00	CERAMIC	0.01MF		50V	
C62	1-130-471-00	MYLAR	0.001MF	5%	50V	
C63	1-102-973-00	CERAMIC	100PF	5%	50V	
C64	1-102-824-00	CERAMIC	470PF	5%	50V	
C65	1-123-875-11	ELECT	10MF	20%	50V	
C66	1-126-233-11	ELECT	22MF	20%	50V	
C67	1-126-233-11	ELECT	22MF	20%	50V	
C68	1-136-165-00	FILM	0.1MF	5%	50V	
C69	1-136-165-00	FILM	0.1MF	5%	50V	
C70	1-123-875-11	ELECT	10MF	20%	50V	
C71	1-123-381-00	ELECT	2.2MF	20%	50V	
C72	1-102-824-00	CERAMIC	470PF	5%	50V	
C73	1-136-171-00	FILM	0.33MF	5%	50V	
C74	1-126-335-11	ELECT	220MF	20%	10V	
C75	1-101-004-00	CERAMIC	0.01MF		50V	
C76	1-126-101-11	ELECT	100MF	20%	16V	
C77	1-126-541-11	ELECT	330MF	20%	16V	
C78	1-124-045-00	ELECT	4.7MF	20%	50V	
C79	1-108-638-11	MYLAR	0.1MF	10%	100V	
C80	1-124-791-11	ELECT	1MF	20%	50V	
C81	1-124-126-00	ELECT	47MF	20%	16V	
C82	1-102-110-00	CERAMIC	220PF	10%	50V	
C83	1-136-165-00	FILM	0.1MF	5%	50V	
C84	1-123-321-00	ELECT	220MF	20%	16V	
C85	1-136-165-00	FILM	0.1MF	5%	50V	
C86	1-123-875-11	ELECT	10MF	20%	50V	
C87	1-136-165-00	FILM	0.1MF	5%	50V	
C88	1-136-165-00	FILM	0.1MF	5%	50V	
C90	1-108-696-11	MYLAR	0.022MF	10%	200V	
C95	1-108-628-11	MYLAR	0.015MF	10%	100V	
C97	1-124-282-00	ELECT	22MF	20%	16V	
C99	1-129-722-00	FILM	0.047MF	10%	630V	
C100	1-129-716-00	FILM	0.015MF	10%	630V	
C101	1-136-111-00	FILM	1MF	5%	200V	
C103	1-130-479-00	MYLAR	0.0047MF	5%	50V	
C104	1-130-479-00	MYLAR	0.0047MF	5%	50V	
C105	1-126-542-11	ELECT	4.7MF	20%	160V	
C106	1-124-046-00	ELECT	10MF		160V	
C108	1-124-126-00	ELECT	47MF	20%	16V	
C110	1-124-126-00	ELECT	47MF	20%	16V	
C112	1-162-318-11	CERAMIC	0.001MF	10%	500V	
C113	1-162-318-11	CERAMIC	0.001MF	10%	500V	
C114	1-136-153-00	FILM	0.01MF	5%	50V	
C115	1-101-004-00	CERAMIC	0.01MF		50V	
C116	1-126-101-11	ELECT	100MF	20%	16V	
C117	1-126-101-11	ELECT	100MF	20%	16V	
C118	1-102-971-00	CERAMIC	82PF	5%	50V	
C119	1-101-004-00	CERAMIC	0.01MF		50V	
C120	1-124-513-11	ELECT	47MF	20%	50V	
C121	1-136-153-00	FILM	0.01MF	5%	50V	
C122	1-136-157-00	FILM	0.022MF	5%	50V	
C123	1-124-513-11	ELECT	47MF	20%	50V	
C124	1-101-004-00	CERAMIC	0.01MF		50V	
C125	1-123-875-11	ELECT	10MF	20%	50V	
C126	1-124-443-00	ELECT	100MF	20%	6.3V	
C127	1-101-004-00	CERAMIC	0.01MF		50V	
C128	1-101-004-00	CERAMIC	0.01MF		50V	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

• The components identified by ⊠ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

E

REF. NO.	PART NO.	DESCRIPTION				REMARK
C129	1-123-875-11	ELECT	10MF	20%	50V	
C130	1-124-443-00	ELECT	100MF	20%	6.3V	
C132	1-126-103-11	ELECT	470MF	20%	16V	
C133	1-124-126-00	ELECT	47MF	20%	16V	
C134	1-124-126-00	ELECT	47MF	20%	16V	
C135	1-162-318-11	CERAMIC	0.001MF	10%	500V	
C136	1-102-228-00	CERAMIC	470PF	10%	500V	
C137	1-102-228-00	CERAMIC	470PF	10%	500V	
C140	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C141	1-102-030-00	CERAMIC	330PF	10%	500V	
C142	1-102-947-00	CERAMIC	10PF	0.5PF	50V	
C143	1-102-947-00	CERAMIC	10PF	0.5PF	50V	
		<DIODE>				
D1	8-719-911-19	DIODE 1SS119				
D2	8-719-300-76	DIODE RH-1A				
D3	8-719-300-76	DIODE RH-1A				
D4	8-719-973-95	DIODE ERD09-15				
D5	8-719-928-08	DIODE ERD28-08S				
D6	8-719-971-20	DIODE ERC38-06				
D7	8-719-971-20	DIODE ERC38-06				
D8	8-719-911-19	DIODE 1SS119				
D9	8-719-911-19	DIODE 1SS119				
D10	8-719-911-19	DIODE 1SS119				
D11	8-719-911-19	DIODE 1SS119				
D12	8-719-911-19	DIODE 1SS119				
D13	8-719-300-76	DIODE RH-1A				
D14	8-719-300-76	DIODE RH-1A				
D15	8-719-000-28	THYRISTOR CR02AM-8				
D16	8-719-931-04	DIODE ERD31-04				
D17	8-719-931-04	DIODE ERD31-04				
D18	8-719-971-20	DIODE ERC38-06				
D19	8-719-971-20	DIODE ERC38-06				
D20	8-719-971-20	DIODE ERC38-06				
D21	8-719-911-19	DIODE 1SS119				
D22	8-719-911-19	DIODE 1SS119				
D23	8-719-911-19	DIODE 1SS119				
D24	8-719-911-19	DIODE 1SS119				
D25	8-719-911-19	DIODE 1SS119				
D26	8-719-931-04	DIODE ERD31-04				
D27	8-719-931-04	DIODE ERD31-04				
D28	8-719-300-76	DIODE RH-1A				
D29	8-719-928-08	DIODE ERD28-08S				
D30	8-719-928-08	DIODE ERD28-08S				
D31	8-719-931-04	DIODE ERD31-04				
D32	8-719-901-19	DIODE V11N				
D33	8-759-157-40	IC UPC574J				
D34	8-759-157-40	IC UPC574J				
D35	8-759-157-40	IC UPC574J				
D36	8-759-157-40	IC UPC574J				
D37	8-719-911-19	DIODE 1SS119				
D38	8-719-911-19	DIODE 1SS119				
D39	8-759-157-40	IC UPC574J				
D40⊠⚠		IC				
D41	8-719-911-19	DIODE 1SS119				
D42	8-719-911-19	DIODE 1SS119				
D43	8-719-911-19	DIODE 1SS119				
D44	8-719-911-19	DIODE 1SS119				
D45	8-719-000-28	THYRISTOR CR02AM-8				
D46	8-719-971-20	DIODE ERC38-06				
D47	8-719-911-19	DIODE 1SS119				
D48	8-719-101-61	DIODE RD6.2E-L2				
D49	8-719-911-19	DIODE 1SS119				
D50	8-719-300-76	DIODE RH-1A				
D51	8-719-101-76	DIODE RD10E-L2				
D52	8-719-101-76	DIODE RD10E-L2				
D53	8-719-911-19	DIODE 1SS119				
D54	8-719-911-19	DIODE 1SS119				
D57	8-769-330-03	THYRISTOR SG-264A				
D58	8-719-971-20	DIODE ERC38-06				
D60	8-719-928-08	DIODE ERD28-08S				
D61	8-719-928-08	DIODE ERD28-08S				
D62	8-719-911-19	DIODE 1SS119				
D63	8-719-945-81	DIODE ERC06-15SA				
D65	8-719-911-19	DIODE 1SS119				
D66	8-719-911-19	DIODE 1SS119				
D67	8-719-911-19	DIODE 1SS119				
D68	8-719-911-19	DIODE 1SS119				
D69	8-719-110-39	DIODE RD15ES-B1				
D70	8-719-110-39	DIODE RD15ES-B1				
D71	8-719-911-19	DIODE 1SS119				
D72	8-719-911-19	DIODE 1SS119				
D73	8-719-000-28	THYRISTOR CR02AM-8				
D74	8-719-911-19	DIODE 1SS119				
D75	8-719-000-28	THYRISTOR CR02AM-8				
D76	8-719-000-28	THYRISTOR CR02AM-8				
D77	8-719-911-19	DIODE 1SS119				
D79	8-719-931-04	DIODE ERD31-04				
		<CONNECTOR>				
E1	*1-566-059-11	PIN, CONNECTOR 7P				
E2	*1-566-056-11	PIN, CONNECTOR 4P				
E3	*1-566-056-11	PIN, CONNECTOR 4P				
E4	*1-508-767-00	PIN, CONNECTOR (5MM PITCH) 5P				
E5	*1-508-767-00	PIN, CONNECTOR (5MM PITCH) 5P				
E6	*1-508-784-00	PIN, CONNECTOR (5MM PITCH) 1P				
E7	*1-508-766-00	PIN, CONNECTOR (5MM PITCH) 4P				
E8	*1-566-054-11	PIN, CONNECTOR 2P				
E9	*1-566-054-11	PIN, CONNECTOR 2P				
E10	*1-566-055-11	PIN, CONNECTOR 3P				
E11	*1-566-058-11	PIN, CONNECTOR 6P				
E12	*1-566-054-11	PIN, CONNECTOR 2P				
E13	*1-566-054-11	PIN, CONNECTOR 2P				
E14	*1-508-766-00	PIN, CONNECTOR (5MM PITCH) 4P				
E15	*1-566-055-11	PIN, CONNECTOR 3P				
E16	*1-566-054-11	PIN, CONNECTOR 2P				
E17	*1-566-059-11	PIN, CONNECTOR 7P				
E18	*1-566-055-11	PIN, CONNECTOR 3P				
E19	*1-566-054-11	PIN, CONNECTOR 2P				
E20	*1-566-056-11	PIN, CONNECTOR 4P				
E21	*1-566-055-11	PIN, CONNECTOR 3P				
E23	*1-566-055-11	PIN, CONNECTOR 3P				
		<IC>				
IC1	8-759-945-58	IC RC4558P				
IC2	8-759-981-64	IC LM2903DQ				
IC3	8-759-945-58	IC RC4558P				
IC4	8-759-981-64	IC LM2903DQ				
IC5	8-759-981-64	IC LM2903DQ				
IC6	8-759-981-64	IC LM2903DQ				
IC7	8-759-945-58	IC RC4558P				
IC8	8-759-103-92	IC UPC318C				
		<COIL>				
L1	1-459-148-00	COIL				
L2	1-459-975-11	COIL, HORIZONTAL LINEARITY				
L3	1-459-075-00	COIL, DYNAMIC CONVERSION CHOKE				
L5	1-421-603-11	COIL, FERRITE CHOKE				
L6	1-407-365-00	COIL, CHOKE				

E

REF. NO.	PART NO.	DESCRIPTION	REMARK
L7	1-459-110-00	COIL, DUST CORE	
L8	1-408-697-00	COIL, CHOKE	
		<TRANSISTOR>	
Q1	8-729-140-50	TRANSISTOR 2SC3209LK	
Q2	8-729-304-26	TRANSISTOR 2SC3263-O	
Q3	8-729-140-50	TRANSISTOR 2SC3209LK	
Q4	8-729-313-82	TRANSISTOR 2SD1138-C	
Q5	8-729-232-01	TRANSISTOR 2SC4532	
Q6	8-729-300-70	TRANSISTOR 2SD1137	
Q7	8-729-300-80	TRANSISTOR 2SB860	
Q8	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q9	8-729-697-92	TRANSISTOR 2SA979-G	
Q10	8-729-309-08	TRANSISTOR 2SC1890A-E	
Q11	8-729-300-70	TRANSISTOR 2SD1137	
Q12	8-729-309-08	TRANSISTOR 2SC1890A-E	
Q13	8-729-309-36	TRANSISTOR 2SA893A-EV	
Q14	8-729-300-80	TRANSISTOR 2SB860	
Q15	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q16	8-729-800-32	TRANSISTOR 2SC2362K-G	
Q17	8-729-800-32	TRANSISTOR 2SC2362K-G	
Q18	8-729-309-08	TRANSISTOR 2SC1890A-E	
Q19	8-729-306-92	TRANSISTOR 2SD669A-C	
Q20	8-729-309-36	TRANSISTOR 2SA893A-EV	
Q21	8-729-306-92	TRANSISTOR 2SD669A-C	
Q22	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q23	8-729-697-92	TRANSISTOR 2SA979-G	
Q24	8-729-901-72	TRANSISTOR 2SC3317	
Q25	8-729-306-92	TRANSISTOR 2SD669A-C	
Q26	8-729-309-08	TRANSISTOR 2SC1890A-E	
Q27	8-729-309-36	TRANSISTOR 2SA893A-EV	
Q28	8-729-306-92	TRANSISTOR 2SD669A-C	
Q29	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q30	8-729-320-62	TRANSISTOR 2SD789-34	
Q31	8-729-301-56	TRANSISTOR 2SC3387-01AB	
Q32	8-729-374-02	TRANSISTOR 2SB740-3	
Q33	8-729-105-97	TRANSISTOR 2SA1156-2K	
Q34	8-729-140-50	TRANSISTOR 2SC3209LK	
Q35	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q36	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q37	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q38	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q39	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q40	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q41	8-729-133-53	TRANSISTOR 2SC2335-K	
Q42	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q43	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q44	8-729-304-92	TRANSISTOR 2SB649A-C	
Q45	8-729-306-92	TRANSISTOR 2SD669A-C	
Q46	8-729-300-70	TRANSISTOR 2SD1137	
Q47	8-729-300-80	TRANSISTOR 2SB860	
Q48	8-729-122-12	TRANSISTOR 2SA1221-L	
Q49	8-729-122-12	TRANSISTOR 2SA1221-L	
Q50	8-729-891-02	TRANSISTOR 2SC2910-S	
		<RESISTOR>	
R1	1-215-461-00	METAL 47K 1% 1/6W	
R2	1-215-461-00	METAL 47K 1% 1/6W	
R3	1-249-441-11	CARBON 100K 5% 1/4W	
R4	1-249-413-11	CARBON 470 5% 1/4W	
R5	1-249-417-11	CARBON 1K 5% 1/4W	
R6	1-249-417-11	CARBON 1K 5% 1/4W	
R7	1-215-875-11	METAL OXIDE 10K 5% 1W	F
R8	1-215-876-00	METAL OXIDE 15K 5% 1W	F
R9	1-214-892-00	METAL 15K 1% 1/2W	
R10	1-214-892-00	METAL 15K 1% 1/2W	
R11	1-215-437-00	METAL 4.7K 1% 1/6W	
R12	1-249-401-11	CARBON 47 5% 1/4W	
R14	1-249-415-11	CARBON 680 5% 1/4W	
R15	1-216-480-11	METAL OXIDE 820 5% 3W	F
R16	1-215-871-11	METAL OXIDE 2.2K 5% 1W	F
R17	1-216-349-00	WIREWOUND 1 10% 1/2W	
R18	1-249-389-11	CARBON 4.7 5% 1/4W	F
R19	1-249-382-11	CARBON 1.2 5% 1/4W	F
R20	1-249-382-11	CARBON 1.2 5% 1/4W	F
R21	1-249-417-11	CARBON 1K 5% 1/4W	
R22	1-249-417-11	CARBON 1K 5% 1/4W	
R23	1-216-357-00	METAL OXIDE 4.7 5% 1W	F
R24	1-216-357-00	METAL OXIDE 4.7 5% 1W	F
R25	1-215-865-11	METAL OXIDE 220 5% 1W	F
R26	1-216-478-11	METAL OXIDE 390 5% 3W	F
R27	1-249-423-11	CARBON 3.3K 5% 1/4W	
R28	1-249-425-11	CARBON 4.7K 5% 1/4W	
R29	1-249-419-11	CARBON 1.5K 5% 1/4W	
R30	1-215-433-00	METAL 3.3K 1% 1/6W	
R31	1-215-445-00	METAL 10K 1% 1/6W	
R32	1-249-417-11	CARBON 1K 5% 1/4W	
R33	1-249-417-11	CARBON 1K 5% 1/4W	
R34	1-215-437-00	METAL 4.7K 1% 1/6W	
R35	1-249-406-11	CARBON 120 5% 1/4W	
R36	1-215-925-11	METAL OXIDE 22K 5% 3W	F
R37	1-249-405-11	CARBON 100 5% 1/4W	
R38	1-249-377-11	CARBON 0.47 5% 1/4W	F
R39	1-249-377-11	CARBON 0.47 5% 1/4W	F
R40	1-249-417-11	CARBON 1K 5% 1/4W	
R41	1-249-413-11	CARBON 470 5% 1/4W	
R42	1-216-349-00	METAL OXIDE 1 5% 1W	F
R43	1-215-859-00	METAL OXIDE 22 5% 1W	F
R44	1-215-870-11	METAL OXIDE 1.5K 5% 1W	F
R45	1-215-869-11	METAL OXIDE 1K 5% 1W	F
R46	1-216-478-11	METAL OXIDE 390 5% 3W	F
R47	1-215-869-11	METAL OXIDE 1K 5% 1W	F
R48	1-215-425-00	METAL 1.5K 1% 1/6W	
R49	1-216-349-00	METAL OXIDE 1 5% 1W	F
R50	1-215-437-00	METAL 4.7K 1% 1/6W	
R51	1-216-349-00	METAL OXIDE 1 5% 1W	F
R52	1-249-429-11	CARBON 10K 5% 1/4W	
R53	1-247-902-11	CARBON 910K 5% 1/4W	
R54	1-247-883-00	CARBON 150K 5% 1/4W	
R55	1-249-433-11	CARBON 22K 5% 1/4W	
R56	1-249-420-11	CARBON 1.8K 5% 1/4W	
R57	1-249-421-11	CARBON 2.2K 5% 1/4W	F
R58	1-249-429-11	CARBON 10K 5% 1/4W	
R59	1-249-425-11	CARBON 4.7K 5% 1/4W	
R60	1-249-417-11	CARBON 1K 5% 1/4W	
R61	1-249-418-11	CARBON 1.2K 5% 1/4W	
R62	1-215-863-11	METAL OXIDE 100 5% 1W	F
R63	1-215-421-00	METAL 1K 1% 1/6W	
R64	1-215-445-00	METAL 10K 1% 1/6W	
R65	1-249-420-11	CARBON 1.8K 5% 1/4W	
R66	1-215-878-00	METAL OXIDE 33K 5% 1W	F
R67	1-249-401-11	CARBON 47 5% 1/4W	
R68	1-249-425-11	CARBON 4.7K 5% 1/4W	
R69	1-215-461-00	METAL 47K 1% 1/6W	
R70	1-215-453-00	METAL 22K 1% 1/6W	
R71	1-215-429-00	METAL 2.2K 1% 1/6W	
R72	1-247-688-11	CARBON 10 5% 1/4W	F
R73	1-247-688-11	CARBON 10 5% 1/4W	F
R74	1-247-688-11	CARBON 10 5% 1/4W	F
R75	1-249-423-11	CARBON 3.3K 5% 1/4W	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

• The components identified by ⊠ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

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REF. NO.	PART NO.	DESCRIPTION				REMARK
R76	1-249-425-11	CARBON	4.7K	5%	1/4W	
R77	1-249-417-11	CARBON	1K	5%	1/4W	
R78	1-215-437-00	METAL	4.7K	1%	1/6W	
R79	1-215-437-00	METAL	4.7K	1%	1/6W	
R80	1-249-417-11	CARBON	1K	5%	1/4W	
R81	1-249-417-11	CARBON	1K	5%	1/4W	
R82	1-249-405-11	CARBON	100	5%	1/4W	
R83	1-249-414-11	CARBON	560	5%	1/4W	
R84	1-249-419-11	CARBON	1.5K	5%	1/4W	
R85	1-249-452-11	CARBON	2.7	5%	1/4W	F
R86	1-249-452-11	CARBON	2.7	5%	1/4W	F
R87	1-215-863-11	METAL OXIDE	100	5%	1W	F
R88	1-216-349-00	METAL OXIDE	1	5%	1W	F
R89	1-216-353-00	METAL OXIDE	2.2	5%	1W	F
R90	1-216-353-00	METAL OXIDE	2.2	5%	1W	F
R91	1-247-881-00	CARBON	120K	5%	1/4W	
R92	1-249-425-11	CARBON	4.7K	5%	1/4W	
R93	1-249-417-11	CARBON	1K	5%	1/4W	
R94	1-249-421-11	CARBON	2.2K	5%	1/4W	
R95	1-249-429-11	CARBON	10K	5%	1/4W	
R96	1-249-417-11	CARBON	1K	5%	1/4W	
R97	1-249-421-11	CARBON	2.2K	5%	1/4W	
R98	1-249-421-11	CARBON	2.2K	5%	1/4W	
R99	1-249-421-11	CARBON	2.2K	5%	1/4W	
R100	1-249-400-11	CARBON	39	5%	1/4W	
R101	1-249-417-11	CARBON	1K	5%	1/4W	
R102	1-215-857-11	METAL OXIDE	10	5%	1W	F
R103	1-249-421-11	CARBON	2.2K	5%	1/4W	
R104	1-216-370-11	METAL OXIDE	1.2	5%	2W	F
R105	1-215-860-11	METAL OXIDE	33	5%	1W	F
R106	1-215-863-11	METAL OXIDE	100	5%	1W	F
R107	1-215-863-11	METAL OXIDE	100	5%	1W	F
R108	1-216-345-11	METAL OXIDE	0.47	5%	1W	F
R109	1-215-869-11	METAL OXIDE	1K	5%	1W	F
R110	1-215-902-11	METAL OXIDE	47K	5%	1W	F
R111	1-216-461-00	METAL OXIDE	5.6K	5%	2W	F
R112	1-249-405-11	CARBON	100	5%	1/4W	
R113	1-249-429-11	CARBON	10K	5%	1/4W	
R114 ⊠⚠		METAL			1/6W	
R115 ⊠⚠		METAL			1/6W	
R116	1-215-445-00	METAL	10K	1%	1/6W	
R117	1-249-421-11	CARBON	2.2K	5%	1/4W	
R118	1-249-429-11	CARBON	10K	5%	1/4W	
R119	1-247-883-00	CARBON	150K	5%	1/4W	
R120	1-249-417-11	CARBON	1K	5%	1/4W	
R121	1-249-425-11	CARBON	4.7K	5%	1/4W	
R122	1-249-421-11	CARBON	2.2K	5%	1/4W	
R123	1-249-433-11	CARBON	22K	5%	1/4W	
R124	1-249-421-11	CARBON	2.2K	5%	1/4W	
R125	1-249-441-11	CARBON	100K	5%	1/4W	
R126	1-249-425-11	CARBON	4.7K	5%	1/4W	
R127	1-249-425-11	CARBON	4.7K	5%	1/4W	
R128	1-249-429-11	CARBON	10K	5%	1/4W	
R129	1-215-875-11	METAL OXIDE	10K	5%	1W	F
R130	1-215-875-11	METAL OXIDE	10K	5%	1W	F
R131	1-215-875-11	METAL OXIDE	10K	5%	1W	F
R132	1-215-875-11	METAL OXIDE	10K	5%	1W	F
R133	1-249-417-11	CARBON	1K	5%	1/4W	
R134 ⚠	1-215-433-91	METAL	3.3K	1%	1/6W	
R135 ⚠	1-215-433-91	METAL	3.3K	1%	1/6W	
R136 ⚠	1-215-433-91	METAL	3.3K	1%	1/6W	
R137	1-215-461-00	METAL	47K	1%	1/6W	
R138	1-249-417-11	CARBON	1K	5%	1/4W	
R139	1-249-417-11	CARBON	1K	5%	1/4W	
R140 ⊠⚠		METAL			1/6W	
R141 ⊠⚠		METAL			1/6W	

REF. NO.	PART NO.	DESCRIPTION				REMARK
R142	1-247-887-00	CARBON	220K	5%	1/4W	
R143	1-247-887-00	CARBON	220K	5%	1/4W	
R144	1-215-445-00	METAL	10K	1%	1/6W	
R145	1-249-441-11	CARBON	100K	5%	1/4W	
R146	1-249-417-11	CARBON	1K	5%	1/4W	
R147	1-249-439-11	CARBON	68K	5%	1/4W	
R148	1-249-437-11	CARBON	47K	5%	1/4W	
R149	1-249-426-11	CARBON	5.6K	5%	1/4W	
R150	1-249-421-11	CARBON	2.2K	5%	1/4W	
R151	1-249-435-11	CARBON	33K	5%	1/4W	
R152	1-249-417-11	CARBON	1K	5%	1/4W	
R153	1-247-895-00	CARBON	470K	5%	1/4W	
R154	1-249-429-11	CARBON	10K	5%	1/4W	
R155	1-215-479-00	METAL	270K	1%	1/6W	
R156	1-215-480-00	METAL	300K	1%	1/6W	
R157	1-249-437-11	CARBON	47K	5%	1/4W	
R158	1-249-425-11	CARBON	4.7K	5%	1/4W	
R159	1-216-354-11	METAL OXIDE	2.7	5%	1W	F
R160	1-249-397-11	CARBON	22	5%	1/4W	
R161	1-249-425-11	CARBON	4.7K	5%	1/4W	
R162	1-249-429-11	CARBON	10K	5%	1/4W	
R163	1-249-429-11	CARBON	10K	5%	1/4W	
R164	1-249-429-11	CARBON	10K	5%	1/4W	
R165	1-249-405-11	CARBON	100	5%	1/4W	
R166	1-249-429-11	CARBON	10K	5%	1/4W	
R167	1-249-417-11	CARBON	1K	5%	1/4W	
R168	1-249-425-11	CARBON	4.7K	5%	1/4W	
R170	1-249-417-11	CARBON	1K	5%	1/4W	
R171	1-249-429-11	CARBON	10K	5%	1/4W	
R172	1-249-405-11	CARBON	100	5%	1/4W	
R173	1-249-429-11	CARBON	10K	5%	1/4W	
R174	1-215-859-00	METAL OXIDE	22	5%	1W	F
R175	1-215-421-00	METAL	1K	1%	1/6W	
R176	1-215-421-00	METAL	1K	1%	1/6W	
R180	1-249-417-11	CARBON	1K	5%	1/4W	
R182 ⚠	1-215-433-91	METAL	3.3K	1%	1/6W	
R183 ⊠⚠		METAL			1/6W	
R184	1-215-453-00	METAL	22K	1%	1/6W	
R185	1-249-405-11	CARBON	100	5%	1/4W	
R190	1-215-445-00	METAL	10K	1%	1/6W	
R191	1-215-421-00	METAL	1K	1%	1/6W	
R192	1-215-445-00	METAL	10K	1%	1/6W	
R193	1-215-445-00	METAL	10K	1%	1/6W	
R194	1-215-459-00	METAL	39K	1%	1/6W	
R195	1-215-445-00	METAL	10K	1%	1/6W	
R196	1-249-417-11	CARBON	1K	5%	1/4W	
R197	1-215-445-00	METAL	10K	1%	1/6W	
R198	1-215-457-00	METAL	33K	1%	1/6W	
R199	1-249-425-11	CARBON	4.7K	5%	1/4W	
R200	1-249-405-11	CARBON	100	5%	1/4W	
R201	1-249-429-11	CARBON	10K	5%	1/4W	
R202	1-216-369-00	METAL OXIDE	1	5%	2W	F
R203	1-216-393-00	METAL OXIDE	2.2	5%	3W	F
R204	1-249-429-11	CARBON	10K	5%	1/4W	
R205	1-249-401-11	CARBON	47	5%	1/4W	
R206	1-249-401-11	CARBON	47	5%	1/4W	
R207	1-215-429-00	METAL	2.2K	1%	1/6W	
R208	1-215-421-00	METAL	1K	1%	1/6W	
R209	1-215-421-00	METAL	1K	1%	1/6W	
R210	1-249-432-11	CARBON	18K	5%	1/4W	
R211	1-215-443-00	METAL	8.2K	1%	1/6W	
R212	1-249-414-11	CARBON	560	5%	1/4W	F
R213	1-249-428-11	CARBON	8.2K	5%	1/4W	
R214	1-249-412-11	CARBON	390	5%	1/4W	
R215	1-249-415-11	CARBON	680	5%	1/4W	F

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REF. NO.	PART NO.	DESCRIPTION				REMARK
R216	1-249-403-11	CARBON	68	5%	1/4W	F
R217	1-249-405-11	CARBON	100	5%	1/4W	F
R218	1-216-349-00	METAL OXIDE	1	5%	1W	F
R219	1-216-349-00	METAL OXIDE	1	5%	1W	F
R220	1-216-451-11	METAL OXIDE	120	5%	2W	F
R221	1-216-349-00	METAL OXIDE	1	5%	1W	F
R222	1-249-417-11	CARBON	1K	5%	1/4W	
R223	1-215-425-00	METAL	1.5K	1%	1/6W	
R224	1-215-461-00	METAL	47K	1%	1/6W	
R225	1-215-461-00	METAL	47K	1%	1/6W	
R226	1-249-438-11	CARBON	56K	5%	1/4W	
R227	1-249-438-11	CARBON	56K	5%	1/4W	
R228	1-249-429-11	CARBON	10K	5%	1/4W	
R229	1-249-437-11	CARBON	47K	5%	1/4W	
R230	1-249-437-11	CARBON	47K	5%	1/4W	
R231	1-216-389-11	METAL OXIDE	1	5%	3W	F
R233	1-249-417-11	CARBON	1K	5%	1/4W	
R234	1-216-389-11	METAL OXIDE	1	5%	3W	F
R235	1-249-437-11	CARBON	47K	5%	1/4W	
R236	1-249-437-11	CARBON	47K	5%	1/4W	
R237	1-249-429-11	CARBON	10K	5%	1/4W	
R238	1-249-441-11	CARBON	100K	5%	1/4W	
R239	1-249-429-11	CARBON	10K	5%	1/4W	
R240	1-215-421-00	METAL	1K	1%	1/6W	
R241	1-215-461-00	METAL	47K	1%	1/6W	
R242	1-215-461-00	METAL	47K	1%	1/6W	
R245	1-216-480-11	METAL OXIDE	820	5%	3W	F
R250	1-249-429-11	CARBON	10K	5%	1/4W	
R251	1-249-429-11	CARBON	10K	5%	1/4W	
R252	1-249-401-11	CARBON	47	5%	1/4W	
R253	1-249-405-11	CARBON	100	5%	1/4W	
R254	1-249-421-11	CARBON	2.2K	5%	1/4W	
R255	1-249-417-11	CARBON	1K	5%	1/4W	
R256	1-215-857-11	METAL OXIDE	10	5%	1W	F
R257	1-249-429-11	CARBON	10K	5%	1/4W	
R258	1-249-429-11	CARBON	10K	5%	1/4W	

<VARIABLE RESISTOR>

RV2	1-237-516-21	RES, ADJ, CERMET 2K
RV3	1-237-518-21	RES, ADJ, CERMET 10K

<RELAY>

RY1	1-515-627-11	RELAY

<SPARK GAP>

SG1	1-519-063-99	DISCHARGING GAP
SG2	1-519-063-99	DISCHARGING GAP

<TRANSFORMER>

T1	1-437-144-11	TRANSFORMER, FERRITE (HDT)
T2	1-424-123-11	TRANSFORMER, HORIZONTAL OUTPUT
T3	1-421-602-11	TRANSFORMER, FERRITE (VPCT)
T4	1-407-849-00	TRANSFORMER, D.F
T5	1-437-133-11	TRANSFORMER, FERRITE (HDT)
T6	1-439-380-11	LOT
T7	1-424-124-11	TRANSFORMER, PIN MODULATION

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*A-1345-896-A D BOARD, COMPLETE

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REF. NO.	PART NO.	DESCRIPTION			REMARK
		<CAPACITOR>			
C1	1-102-978-00	CERAMIC	220PF	5% 50V	
C2	1-102-973-00	CERAMIC	100PF	5% 50V	
C3	1-130-871-11	FILM	0.01MF	5% 50V	
C4	1-136-161-00	FILM	0.047MF	5% 50V	
C5	1-124-589-11	ELECT	47MF	20% 16V	
C6	1-130-471-00	FILM	0.001MF	5% 50V	
C7	1-124-589-11	ELECT	47MF	20% 16V	
C8	1-124-589-11	ELECT	47MF	20% 16V	
C9	1-126-094-11	ELECT	4.7MF	20% 25V	
C10	1-136-153-00	FILM	0.01MF	5% 50V	
C11	1-136-153-00	FILM	0.01MF	5% 50V	
C12	1-126-157-11	ELECT	10MF	20% 16V	
C13	1-136-157-00	FILM	0.022MF	5% 50V	
C14	1-124-257-00	ELECT	2.2MF	20% 50V	
C15	1-130-726-00	FILM	0.0015MF	5% 50V	
C16	1-136-173-00	FILM	0.47MF	5% 50V	
C17	1-126-157-11	ELECT	10MF	20% 16V	
C18	1-136-155-00	FILM	0.015MF	5% 50V	
C19	1-124-589-11	ELECT	47MF	20% 16V	
C20	1-124-589-11	ELECT	47MF	20% 16V	
C21	1-124-589-11	ELECT	47MF	20% 16V	
C22	1-124-589-11	ELECT	47MF	20% 16V	
C23	1-101-004-00	CERAMIC	0.01MF	50V	
C24	1-130-871-11	FILM	0.01MF	5% 50V	
C25	1-124-589-11	ELECT	47MF	20% 16V	
C29	1-136-474-11	FILM	0.1MF	5% 100V	
C30	1-130-871-11	FILM	0.01MF	5% 50V	
C31	1-130-871-11	FILM	0.01MF	5% 50V	
C33	1-124-589-11	ELECT	47MF	20% 16V	
C34	1-124-589-11	ELECT	47MF	20% 16V	
C35	1-101-004-00	CERAMIC	0.01MF	50V	
C41	1-136-153-00	FILM	0.01MF	5% 50V	
C43	1-136-161-00	FILM	0.047MF	5% 50V	
C44	1-101-004-00	CERAMIC	0.01MF	50V	
C45	1-102-973-00	CERAMIC	100PF	5% 50V	
C46	1-102-973-00	CERAMIC	100PF	5% 50V	
C47	1-101-004-00	CERAMIC	0.01MF	50V	
C48	1-130-471-00	MYLAR	0.001MF	5% 50V	
C49	1-124-438-00	ELECT	1MF	20% 50V	
C50	1-102-973-00	CERAMIC	100PF	5% 50V	
C51	1-130-471-00	MYLAR	0.001MF	5% 50V	
C52	1-124-589-11	ELECT	47MF	20% 16V	
C53	1-102-824-00	CERAMIC	470PF	5% 50V	
C54	1-102-114-00	CERAMIC	470PF	10% 50V	
C55	1-124-438-00	ELECT	1MF	20% 50V	
C56	1-124-438-00	ELECT	1MF	20% 50V	
C57	1-102-973-00	CERAMIC	100PF	5% 50V	
C58	1-102-973-00	CERAMIC	100PF	5% 50V	
C60	1-124-589-11	ELECT	47MF	20% 16V	
C62	1-126-157-11	ELECT	10MF	20% 16V	
C63	1-130-871-11	FILM	0.01MF	5% 50V	
C64	1-101-361-00	CERAMIC	150PF	5% 50V	
C65	1-101-004-00	CERAMIC	0.01MF	50V	
C67	1-136-153-00	FILM	0.01MF	5% 50V	
C68	1-102-973-00	CERAMIC	100PF	5% 50V	
C69	1-102-973-00	CERAMIC	100PF	5% 50V	
C70	1-130-471-00	MYLAR	0.001MF	5% 50V	
C71	1-136-153-00	FILM	0.01MF	5% 50V	
C72	1-102-973-00	CERAMIC	100PF	5% 50V	
C73	1-130-475-00	MYLAR	0.0022MF	5% 50V	
C74	1-136-153-00	FILM	0.01MF	5% 50V	
C75	1-102-978-00	CERAMIC	220PF	5% 50V	
C76	1-101-361-00	CERAMIC	150PF	5% 50V	
C77	1-124-589-11	ELECT	47MF	20% 16V	
C78	1-136-161-00	FILM	0.047MF	5% 50V	

REF. NO.	PART NO.	DESCRIPTION				REMARK
C79	1-136-165-00	FILM	0.1MF	5%	50V	
C80	1-124-589-11	ELECT	47MF	20%	16V	
C81	1-136-153-00	FILM	0.01MF	5%	50V	
C82	1-136-157-00	FILM	0.022MF	5%	50V	
C83	1-136-165-00	FILM	0.1MF	5%	50V	
C84	1-136-153-00	FILM	0.01MF	5%	50V	
C85	1-136-161-00	FILM	0.047MF	5%	50V	
C86	1-136-157-00	FILM	0.022MF	5%	50V	
C87	1-136-165-00	FILM	0.1MF	5%	50V	
C88	1-124-589-11	ELECT	47MF	20%	16V	
C89	1-136-153-00	FILM	0.01MF	5%	50V	
C90	1-136-161-00	FILM	0.047MF	5%	50V	
C91	1-124-589-11	ELECT	47MF	20%	16V	
C92	1-124-589-11	ELECT	47MF	20%	16V	
C100	1-126-157-11	ELECT	10MF	20%	16V	
C101	1-130-473-00	MYLAR	0.0015MF	5%	50V	
C103	1-124-589-11	ELECT	47MF	20%	16V	
C104	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C105	1-136-161-00	FILM	0.047MF	5%	50V	
C106	1-102-978-00	CERAMIC	220PF	5%	50V	
C107	1-136-161-00	FILM	0.047MF	5%	50V	
C108	1-136-161-00	FILM	0.047MF	5%	50V	
C109	1-102-820-00	CERAMIC	330PF	5%	50V	
C110	1-136-161-00	FILM	0.047MF	5%	50V	
C111	1-136-153-00	FILM	0.01MF	5%	50V	
C112	1-102-961-00	CERAMIC	27PF	5%	50V	
C113	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C114	1-136-161-00	FILM	0.047MF	5%	50V	
C115	1-102-978-00	CERAMIC	220PF	5%	50V	
C116	1-136-161-00	FILM	0.047MF	5%	50V	
C117	1-136-161-00	FILM	0.047MF	5%	50V	
C118	1-102-820-00	CERAMIC	330PF	5%	50V	
C119	1-136-161-00	FILM	0.047MF	5%	50V	
C120	1-136-153-00	FILM	0.01MF	5%	50V	
C121	1-102-961-00	CERAMIC	27PF	5%	50V	
C122	1-124-589-11	ELECT	47MF	20%	16V	
C123	1-124-589-11	ELECT	47MF	20%	16V	
C124	1-101-004-00	CERAMIC	0.01MF		50V	
C125	1-101-004-00	CERAMIC	0.01MF		50V	
C134	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C135	1-136-161-00	FILM	0.047MF	5%	50V	
C136	1-102-978-00	CERAMIC	220PF	5%	50V	
C138	1-136-161-00	FILM	0.047MF	5%	50V	
C139	1-136-161-00	FILM	0.047MF	5%	50V	
C140	1-102-824-00	CERAMIC	470PF	5%	50V	
C141	1-136-161-00	FILM	0.047MF	5%	50V	
C142	1-102-973-00	CERAMIC	100PF	5%	50V	
C143	1-136-153-00	FILM	0.01MF	5%	50V	
C145	1-102-961-00	CERAMIC	27PF	5%	50V	
C146	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C147	1-124-589-11	ELECT	47MF	20%	16V	
C148	1-102-978-00	CERAMIC	220PF	5%	50V	
C149	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C150	1-124-589-11	ELECT	47MF	20%	16V	
C151	1-124-589-11	ELECT	47MF	20%	16V	
C152	1-124-589-11	ELECT	47MF	20%	16V	
C153	1-136-161-00	FILM	0.047MF	5%	50V	
C154	1-136-161-00	FILM	0.047MF	5%	50V	
C155	1-102-824-00	CERAMIC	470PF	5%	50V	
C156	1-136-161-00	FILM	0.047MF	5%	50V	
C157	1-136-153-00	FILM	0.01MF	5%	50V	
C158	1-102-961-00	CERAMIC	27PF	5%	50V	
C159	1-126-157-11	ELECT	10MF	20%	16V	
C160	1-126-157-11	ELECT	10MF	20%	16V	
C161	1-136-161-00	FILM	0.047MF	5%	50V	

REF. NO.	PART NO.	DESCRIPTION				REMARK
C165	1-136-165-00	FILM	0.1MF	5%	50V	
C167	1-124-589-11	ELECT	47MF	20%	16V	
C180	1-124-589-11	ELECT	47MF	20%	16V	
C181	1-124-589-11	ELECT	47MF	20%	16V	
C201	1-102-824-00	CERAMIC	470PF	5%	50V	
C202	1-101-001-00	CERAMIC	0.001MF		50V	
C203	1-101-001-00	CERAMIC	0.001MF		50V	
C204	1-101-001-00	CERAMIC	0.001MF		50V	
C205	1-101-001-00	CERAMIC	0.001MF		50V	
C206	1-101-001-00	CERAMIC	0.001MF		50V	
C207	1-102-978-00	CERAMIC	220PF	5%	50V	
C210	1-101-001-00	CERAMIC	0.001MF		50V	
C211	1-101-001-00	CERAMIC	0.001MF		50V	
C212	1-136-153-00	FILM	0.01MF	5%	50V	
C213	1-162-318-11	CERAMIC	0.001MF	10%	500V	
C214	1-162-318-11	CERAMIC	0.001MF	10%	500V	
C215	1-136-157-00	FILM	0.022MF	5%	50V	
C216	1-136-153-00	FILM	0.01MF	5%	50V	
C217	1-102-973-00	CERAMIC	100PF	5%	50V	
C218	1-130-871-11	FILM	0.01MF	5%	50V	
C220	1-124-589-11	ELECT	47MF	20%	16V	
C222	1-102-973-00	CERAMIC	100PF	5%	50V	
C223	1-136-153-00	FILM	0.01MF	5%	50V	
C224	1-136-153-00	FILM	0.01MF	5%	50V	
C225	1-101-004-00	CERAMIC	0.01MF		50V	
C226	1-102-973-00	CERAMIC	100PF	5%	50V	
C227	1-101-004-00	CERAMIC	0.01MF		50V	
C230	1-101-004-00	CERAMIC	0.01MF		50V	
C231	1-101-004-00	CERAMIC	0.01MF		50V	
C232	1-101-004-00	CERAMIC	0.01MF		50V	
C233	1-102-978-00	CERAMIC	220PF	5%	50V	
C235	1-101-004-00	CERAMIC	0.01MF		50V	
C236	1-101-004-00	CERAMIC	0.01MF		50V	
C237	1-101-004-00	CERAMIC	0.01MF		50V	
C238	1-101-004-00	CERAMIC	0.01MF		50V	
C239	1-101-004-00	CERAMIC	0.01MF		50V	
C240	1-101-004-00	CERAMIC	0.01MF		50V	
C241	1-101-004-00	CERAMIC	0.01MF		50V	

<CONNECTOR>

D2	*1-566-054-11	PIN, CONNECTOR 2P
D3	*1-566-056-11	PIN, CONNECTOR 4P
D4	*1-566-062-11	PIN, CONNECTOR 10P
D5	*1-566-056-11	PIN, CONNECTOR 4P
D6	*1-566-055-11	PIN, CONNECTOR 3P
D7	*1-566-054-11	PIN, CONNECTOR 2P
D9	*1-566-055-11	PIN, CONNECTOR 3P
D11	*1-566-058-11	PIN, CONNECTOR 6P
D12	*1-566-054-11	PIN, CONNECTOR 2P
D13	*1-566-058-11	PIN, CONNECTOR 6P
D14	*1-566-056-11	PIN, CONNECTOR 4P
D15	*1-566-056-11	PIN, CONNECTOR 4P
D16	*1-566-055-11	PIN, CONNECTOR 3P
D17	*1-566-056-11	PIN, CONNECTOR 4P
D18	*1-566-056-11	PIN, CONNECTOR 4P

<DIODE>

D1	8-719-110-41	DIODE RD15ES-B2
D2	8-719-110-41	DIODE RD15ES-B2
D3	8-719-110-03	DIODE RD7.5ES-B2
D4	8-719-110-03	DIODE RD7.5ES-B2
D5	8-719-110-03	DIODE RD7.5ES-B2
D6	8-719-911-19	DIODE 1SS119
D7	8-719-911-19	DIODE 1SS119
D8	8-719-110-03	DIODE RD7.5ES-B2

D

REF. NO.	PART NO.	DESCRIPTION	REMARK
D9	8-719-110-03	DIODE RD7.5ES-B2	
D13	8-719-911-19	DIODE 1SS119	
D14	8-719-911-19	DIODE 1SS119	
D15	8-719-911-19	DIODE 1SS119	
D16	8-719-110-03	DIODE RD7.5ES-B2	
D17	8-719-911-19	DIODE 1SS119	
D18	8-719-911-19	DIODE 1SS119	
D19	8-719-109-81	DIODE RD4.7ES-B2	
D20	8-719-110-03	DIODE RD7.5ES-B2	
D21	8-719-110-03	DIODE RD7.5ES-B2	
D22	8-719-911-19	DIODE 1SS119	
D23	8-719-911-19	DIODE 1SS119	
D24	8-719-911-19	DIODE 1SS119	
D25	8-719-911-19	DIODE 1SS119	
D26	8-719-911-19	DIODE 1SS119	
D27	8-719-911-19	DIODE 1SS119	
D28	8-719-911-19	DIODE 1SS119	
D29	8-719-911-19	DIODE 1SS119	
D30	8-719-911-19	DIODE 1SS119	
D31	8-719-911-19	DIODE 1SS119	
D32	8-719-911-19	DIODE 1SS119	
D33	8-719-911-19	DIODE 1SS119	
D34	8-719-911-19	DIODE 1SS119	
D35	8-719-110-36	DIODE RD13ES-B2	
D36	8-719-911-19	DIODE 1SS119	
D37	8-719-110-36	DIODE RD13ES-B2	
D39	8-719-911-19	DIODE 1SS119	
D40	8-719-911-19	DIODE 1SS119	
D41	8-719-911-19	DIODE 1SS119	
		<IC>	
IC1	8-759-131-11	IC UPC311C	
IC2	8-759-100-60	IC UPC1377C	
IC3	8-759-917-43	IC SN74HC138N	
IC4	8-759-645-19	IC M54519P	
IC5	8-759-208-14	IC TC4066BPHB	
IC6	8-759-240-53	IC TC4053BP	
IC7	8-759-945-58	IC RC4558P	
IC8	8-759-945-58	IC RC4558P	
IC9	8-759-945-58	IC RC4558P	
IC10	8-759-945-58	IC RC4558P	
IC11	8-759-945-58	IC RC4558P	
IC12	8-759-131-11	IC UPC311C	
IC13	8-759-131-11	IC UPC311C	
IC14	8-759-990-82	IC TL082CP	
IC15	8-759-945-58	IC RC4558P	
IC16	8-759-014-96	IC MC1496P	
IC17	8-759-916-14	IC SN74HC04N	
IC18	8-759-981-64	IC LM2903DQ	
IC19	8-759-945-58	IC RC4558P	
IC20	8-759-945-58	IC RC4558P	
IC21	8-759-945-58	IC RC4558P	
IC22	8-759-945-58	IC RC4558P	
IC23	8-759-240-53	IC TC4053BP	
IC24	8-759-240-53	IC TC4053BP	
IC25	8-759-945-58	IC RC4558P	
IC26	8-759-945-58	IC RC4558P	
IC27	8-759-945-58	IC RC4558P	
IC28	8-759-208-06	IC TC4051BPHB	
IC29	8-759-208-06	IC TC4051BPHB	
IC30	8-759-131-11	IC UPC311C	
IC31	8-759-131-11	IC UPC311C	
IC32	8-759-990-82	IC TL082CP	

REF. NO.	PART NO.	DESCRIPTION	REMARK
		<COIL>	
L1	1-408-239-00	INDUCTOR 4.7MMH	
L3	1-408-237-00	INDUCTOR 3.3MMH	
L4	1-408-237-00	INDUCTOR 3.3MMH	
L5	1-408-237-00	INDUCTOR 3.3MMH	
L6	1-408-237-00	INDUCTOR 3.3MMH	
L7	1-408-240-00	INDUCTOR 6.8MMH	
		<TRANSISTOR>	
Q1	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q2	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q3	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q4	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q5	8-729-900-36	TRANSISTOR DTC124ES	
Q6	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q7	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q8	8-729-900-36	TRANSISTOR DTC124ES	
Q9	8-729-900-36	TRANSISTOR DTC124ES	
Q10	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q11	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q12	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q13	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q14	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q16	8-729-900-36	TRANSISTOR DTC124ES	
Q18	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q19	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q20	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q21	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q22	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q23	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q24	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q25	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q26	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q27	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q28	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q29	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q30	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q31	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q32	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q33	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q34	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q35	8-729-900-36	TRANSISTOR DTC124ES	
Q36	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q37	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q38	8-729-105-73	TRANSISTOR 2SK523-L2	
Q39	8-729-900-36	TRANSISTOR DTC124ES	
Q40	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q41	8-729-105-73	TRANSISTOR 2SK523-L2	
Q42	8-729-900-36	TRANSISTOR DTC124ES	
Q43	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q44	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q45	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q49	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q50	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q51	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q52	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q53	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q54	8-729-105-73	TRANSISTOR 2SK523-L2	
Q55	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q56	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q57	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q58	8-729-105-73	TRANSISTOR 2SK523-L2	
Q59	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q60	8-729-119-76	TRANSISTOR 2SA1175-HFE	

REF. NO.	PART NO.	DESCRIPTION	REMARK
Q61	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q62	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q63	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q64	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q65	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q66	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q68	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q69	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q70	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q71	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q72	8-729-105-73	TRANSISTOR 2SK523-L2	
Q73	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q74	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q75	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q76	8-729-105-73	TRANSISTOR 2SK523-L2	
Q77	8-729-900-36	TRANSISTOR DTC124ES	
Q78	8-729-900-36	TRANSISTOR DTC124ES	
Q79	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q80	8-729-107-84	TRANSISTOR 2SC3623A-L	
Q81	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q82	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q83	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q102	8-729-900-36	TRANSISTOR DTC124ES	
Q103	8-729-900-36	TRANSISTOR DTC124ES	
Q105	8-729-900-36	TRANSISTOR DTC124ES	
Q106	8-729-900-63	TRANSISTOR DTA124ES	
Q107	8-729-900-63	TRANSISTOR DTA124ES	
Q108	8-729-900-63	TRANSISTOR DTA124ES	
Q109	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q110	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q111	8-729-900-36	TRANSISTOR DTC124ES	
Q112	8-729-900-36	TRANSISTOR DTC124ES	
Q113	8-729-900-36	TRANSISTOR DTC124ES	
Q114	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q115	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q116	8-729-900-36	TRANSISTOR DTC124ES	
Q117	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q118	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q119	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q120	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q121	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q122	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q123	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q124	8-729-119-78	TRANSISTOR 2SC2785-HFE	

<RESISTOR>

R1	1-249-425-11	CARBON	4.7K	5%	1/4W
R2	1-249-431-11	CARBON	15K	5%	1/4W
R3	1-249-417-11	CARBON	1K	5%	1/4W
R4	1-249-425-11	CARBON	4.7K	5%	1/4W
R5	1-249-431-11	CARBON	15K	5%	1/4W
R6	1-215-421-00	METAL	1K	1%	1/6W
R7	1-215-437-00	METAL	4.7K	1%	1/6W
R8	1-215-437-00	METAL	4.7K	1%	1/6W
R10	1-249-417-11	CARBON	1K	5%	1/4W
R12	1-247-895-00	CARBON	470K	5%	1/4W
R13	1-249-417-11	CARBON	1K	5%	1/4W
R14	1-215-449-00	METAL	15K	1%	1/6W
R15	1-249-429-11	CARBON	10K	5%	1/4W
R16	1-249-417-11	CARBON	1K	5%	1/4W
R17	1-249-426-11	CARBON	5.6K	5%	1/4W
R18	1-249-417-11	CARBON	1K	5%	1/4W
R19	1-249-429-11	CARBON	10K	5%	1/4W
R20	1-249-430-11	CARBON	12K	5%	1/4W
R21	1-249-430-11	CARBON	12K	5%	1/4W
R22	1-249-440-11	CARBON	82K	5%	1/4W
R23	1-249-433-11	CARBON	22K	5%	1/4W
R24	1-249-440-11	CARBON	82K	5%	1/4W
R25	1-249-423-11	CARBON	3.3K	5%	1/4W
R26	1-249-429-11	CARBON	10K	5%	1/4W
R27	1-247-868-11	CARBON	36K	5%	1/4W
R28	1-249-428-11	CARBON	8.2K	5%	1/4W
R29	1-249-437-11	CARBON	47K	5%	1/4W
R30	1-249-429-11	CARBON	10K	5%	1/4W
R31	1-249-429-11	CARBON	10K	5%	1/4W
R32	1-249-417-11	CARBON	1K	5%	1/4W
R33	1-249-429-11	CARBON	10K	5%	1/4W
R34	1-249-433-11	CARBON	22K	5%	1/4W
R35	1-249-429-11	CARBON	10K	5%	1/4W
R36	1-249-429-11	CARBON	10K	5%	1/4W
R37	1-249-425-11	CARBON	4.7K	5%	1/4W
R38	1-249-417-11	CARBON	1K	5%	1/4W
R39	1-249-417-11	CARBON	1K	5%	1/4W
R40	1-249-417-11	CARBON	1K	5%	1/4W
R43	1-249-417-11	CARBON	1K	5%	1/4W
R44	1-249-429-11	CARBON	10K	5%	1/4W
R45	1-249-417-11	CARBON	1K	5%	1/4W
R46	1-249-429-11	CARBON	10K	5%	1/4W
R47	1-215-453-00	METAL	22K	1%	1/6W
R48	1-215-481-00	METAL	330K	1%	1/6W
R49	1-215-481-00	METAL	330K	1%	1/6W
R50	1-249-417-11	CARBON	1K	5%	1/4W
R51	1-249-429-11	CARBON	10K	5%	1/4W
R52	1-249-413-11	CARBON	470	5%	1/4W
R53	1-249-417-11	CARBON	1K	5%	1/4W
R54	1-215-421-00	METAL	1K	1%	1/6W
R59	1-249-417-11	CARBON	1K	5%	1/4W
R60	1-215-447-00	METAL	12K	1%	1/6W
R61	1-215-445-00	METAL	10K	1%	1/6W
R62	1-215-445-00	METAL	10K	1%	1/6W
R63	1-215-461-00	METAL	47K	1%	1/6W
R64	1-249-435-11	CARBON	33K	5%	1/4W
R65	1-249-433-11	CARBON	22K	5%	1/4W
R66	1-249-405-11	CARBON	100	5%	1/4W
R67	1-215-445-00	METAL	10K	1%	1/6W
R68	1-249-429-11	CARBON	10K	5%	1/4W
R69	1-215-445-00	METAL	10K	1%	1/6W
R70	1-215-459-00	METAL	39K	1%	1/6W
R71	1-215-459-00	METAL	39K	1%	1/6W
R72	1-249-429-11	CARBON	10K	5%	1/4W
R73	1-215-483-00	METAL	390K	1%	1/6W
R74	1-249-437-11	CARBON	47K	5%	1/4W
R75	1-249-441-11	CARBON	100K	5%	1/4W
R77	1-249-433-11	CARBON	22K	5%	1/4W
R79	1-215-459-00	METAL	39K	1%	1/6W
R80	1-215-459-00	METAL	39K	1%	1/6W
R81	1-215-481-00	METAL	330K	1%	1/6W
R82	1-249-437-11	CARBON	47K	5%	1/4W
R83	1-247-893-11	CARBON	390K	5%	1/4W
R84	1-249-429-11	CARBON	10K	5%	1/4W
R85	1-249-441-11	CARBON	100K	5%	1/4W
R86	1-249-433-11	CARBON	22K	5%	1/4W
R88	1-215-445-00	METAL	10K	1%	1/6W
R89	1-215-469-00	METAL	100K	1%	1/6W
R90	1-215-445-00	METAL	10K	1%	1/6W
R92	1-215-445-00	METAL	10K	1%	1/6W
R93	1-215-459-00	METAL	39K	1%	1/6W
R94	1-215-441-00	METAL	6.8K	1%	1/6W
R96	1-249-429-11	CARBON	10K	5%	1/4W
R97	1-249-433-11	CARBON	22K	5%	1/4W
R98	1-215-445-00	METAL	10K	1%	1/6W

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REF. NO.	PART NO.	DESCRIPTION				REMARK
R99	1-215-449-00	METAL	15K	1%	1/6W	
R100	1-215-445-00	METAL	10K	1%	1/6W	
R101	1-215-449-00	METAL	15K	1%	1/6W	
R102	1-215-445-00	METAL	10K	1%	1/6W	
R103	1-249-437-11	CARBON	47K	5%	1/4W	
R104	1-215-445-00	METAL	10K	1%	1/6W	
R105	1-249-429-11	CARBON	10K	5%	1/4W	
R106	1-215-445-00	METAL	10K	1%	1/6W	
R107	1-215-461-00	METAL	47K	1%	1/6W	
R108	1-215-461-00	METAL	47K	1%	1/6W	
R109	1-215-485-00	METAL	470K	1%	1/6W	
R110	1-249-437-11	CARBON	47K	5%	1/4W	
R111	1-249-429-11	CARBON	10K	5%	1/4W	
R112	1-249-441-11	CARBON	100K	5%	1/4W	
R113	1-215-465-00	METAL	68K	1%	1/6W	
R114	1-215-421-00	METAL	1K	1%	1/6W	
R115	1-249-429-11	CARBON	10K	5%	1/4W	
R116	1-215-421-00	METAL	1K	1%	1/6W	
R117	1-215-413-00	METAL	470	1%	1/6W	
R118	1-249-437-11	CARBON	47K	5%	1/4W	
R119	1-249-441-11	CARBON	100K	5%	1/4W	
R120	1-215-449-00	METAL	15K	1%	1/6W	
R121	1-215-449-00	METAL	15K	1%	1/6W	
R122	1-215-449-00	METAL	15K	1%	1/6W	
R123	1-215-449-00	METAL	15K	1%	1/6W	
R127	1-249-405-11	CARBON	100	5%	1/4W	
R130	1-249-420-11	CARBON	1.8K	5%	1/4W	
R131	1-249-425-11	CARBON	4.7K	5%	1/4W	
R132	1-249-425-11	CARBON	4.7K	5%	1/4W	
R133	1-249-417-11	CARBON	1K	5%	1/4W	
R134	1-249-437-11	CARBON	47K	5%	1/4W	
R135	1-249-425-11	CARBON	4.7K	5%	1/4W	
R136	1-249-417-11	CARBON	1K	5%	1/4W	
R137	1-215-421-00	METAL	1K	1%	1/6W	
R138	1-215-452-00	METAL	20K	1%	1/6W	
R139	1-249-417-11	CARBON	1K	5%	1/4W	
R141	1-247-895-00	CARBON	470K	5%	1/4W	
R142	1-249-421-11	CARBON	2.2K	5%	1/4W	
R143	1-249-435-11	CARBON	33K	5%	1/4W	
R144	1-249-429-11	CARBON	10K	5%	1/4W	
R145	1-249-423-11	CARBON	3.3K	5%	1/4W	
R146	1-215-461-00	METAL	47K	1%	1/6W	
R147	1-249-429-11	CARBON	10K	5%	1/4W	
R148	1-249-433-11	CARBON	22K	5%	1/4W	
R149	1-249-429-11	CARBON	10K	5%	1/4W	
R150	1-249-429-11	CARBON	10K	5%	1/4W	
R151	1-215-441-00	METAL	6.8K	1%	1/6W	
R152	1-249-433-11	CARBON	22K	5%	1/4W	
R153	1-215-457-00	METAL	33K	1%	1/6W	
R154	1-215-453-00	METAL	22K	1%	1/6W	
R155	1-215-453-00	METAL	22K	1%	1/6W	
R156	1-215-469-00	METAL	100K	1%	1/6W	
R157	1-249-429-11	CARBON	10K	5%	1/4W	
R158	1-249-417-11	CARBON	1K	5%	1/4W	
R159	1-249-433-11	CARBON	22K	5%	1/4W	
R160	1-249-437-11	CARBON	47K	5%	1/4W	
R161	1-249-425-11	CARBON	4.7K	5%	1/4W	
R162	1-215-445-00	METAL	10K	1%	1/6W	
R163	1-249-407-11	CARBON	150	5%	1/4W	
R164	1-249-417-11	CARBON	1K	5%	1/4W	
R165	1-249-401-11	CARBON	47	5%	1/4W	
R166	1-249-430-11	CARBON	12K	5%	1/4W	
R167	1-249-401-11	CARBON	47	5%	1/4W	
R168	1-249-417-11	CARBON	1K	5%	1/4W	
R169	1-249-425-11	CARBON	4.7K	5%	1/4W	
R170	1-249-425-11	CARBON	4.7K	5%	1/4W	

REF. NO.	PART NO.	DESCRIPTION				REMARK
R171	1-249-417-11	CARBON	1K	5%	1/4W	
R172	1-249-417-11	CARBON	1K	5%	1/4W	
R173	1-249-429-11	CARBON	10K	5%	1/4W	
R174	1-249-425-11	CARBON	4.7K	5%	1/4W	
R175	1-249-420-11	CARBON	1.8K	5%	1/4W	
R176	1-249-420-11	CARBON	1.8K	5%	1/4W	
R178	1-249-425-11	CARBON	4.7K	5%	1/4W	
R179	1-249-429-11	CARBON	10K	5%	1/4W	
R180	1-249-429-11	CARBON	10K	5%	1/4W	
R181	1-249-417-11	CARBON	1K	5%	1/4W	
R186	1-249-417-11	CARBON	1K	5%	1/4W	
R187	1-249-425-11	CARBON	4.7K	5%	1/4W	
R190	1-249-423-11	CARBON	3.3K	5%	1/4W	
R191	1-249-429-11	CARBON	10K	5%	1/4W	
R192	1-249-429-11	CARBON	10K	5%	1/4W	
R194	1-249-425-11	CARBON	4.7K	5%	1/4W	
R195	1-249-425-11	CARBON	4.7K	5%	1/4W	
R196	1-249-420-11	CARBON	1.8K	5%	1/4W	
R197	1-249-429-11	CARBON	10K	5%	1/4W	
R198	1-249-420-11	CARBON	1.8K	5%	1/4W	
R199	1-249-420-11	CARBON	1.8K	5%	1/4W	
R200	1-249-429-11	CARBON	10K	5%	1/4W	
R201	1-249-429-11	CARBON	10K	5%	1/4W	
R202	1-249-425-11	CARBON	4.7K	5%	1/4W	
R203	1-249-435-11	CARBON	33K	5%	1/4W	
R204	1-249-441-11	CARBON	100K	5%	1/4W	
R205	1-249-417-11	CARBON	1K	5%	1/4W	
R206	1-249-417-11	CARBON	1K	5%	1/4W	
R207	1-249-437-11	CARBON	47K	5%	1/4W	
R208	1-249-421-11	CARBON	2.2K	5%	1/4W	
R209	1-247-895-00	CARBON	470K	5%	1/4W	
R210	1-249-417-11	CARBON	1K	5%	1/4W	
R211	1-249-429-11	CARBON	10K	5%	1/4W	
R212	1-249-417-11	CARBON	1K	5%	1/4W	
R213	1-249-429-11	CARBON	10K	5%	1/4W	
R214	1-249-421-11	CARBON	2.2K	5%	1/4W	
R215	1-249-433-11	CARBON	22K	5%	1/4W	
R216	1-249-417-11	CARBON	1K	5%	1/4W	
R217	1-249-417-11	CARBON	1K	5%	1/4W	
R218	1-249-441-11	CARBON	100K	5%	1/4W	
R219	1-247-895-00	CARBON	470K	5%	1/4W	
R220	1-249-429-11	CARBON	10K	5%	1/4W	
R221	1-249-429-11	CARBON	10K	5%	1/4W	
R222	1-249-433-11	CARBON	22K	5%	1/4W	
R223	1-249-437-11	CARBON	47K	5%	1/4W	
R224	1-249-425-11	CARBON	4.7K	5%	1/4W	
R225	1-249-429-11	CARBON	10K	5%	1/4W	
R226	1-215-453-00	METAL	22K	1%	1/6W	
R227	1-215-453-00	METAL	22K	1%	1/6W	
R228	1-215-477-00	METAL	220K	1%	1/6W	
R229	1-249-429-11	CARBON	10K	5%	1/4W	
R230	1-249-441-11	CARBON	100K	5%	1/4W	
R231	1-249-433-11	CARBON	22K	5%	1/4W	
R232	1-249-433-11	CARBON	22K	5%	1/4W	
R233	1-249-429-11	CARBON	10K	5%	1/4W	
R234	1-215-445-00	METAL	10K	1%	1/6W	
R235	1-215-445-00	METAL	10K	1%	1/6W	
R236	1-215-469-00	METAL	100K	1%	1/6W	
R237	1-249-441-11	CARBON	100K	5%	1/4W	
R238	1-249-429-11	CARBON	10K	5%	1/4W	
R239	1-249-433-11	CARBON	22K	5%	1/4W	
R240	1-249-433-11	CARBON	22K	5%	1/4W	
R241	1-215-451-00	METAL	18K	1%	1/6W	
R242	1-247-903-00	CARBON	1M	5%	1/4W	
R243	1-215-451-00	METAL	18K	1%	1/6W	
R244	1-249-429-11	CARBON	10K	5%	1/4W	

REF. NO.	PART NO.	DESCRIPTION				REMARK
R245	1-215-451-00	METAL	18K	1%	1/6W	
R246	1-247-903-00	CARBON	1M	5%	1/4W	
R247	1-215-451-00	METAL	18K	1%	1/6W	
R248	1-249-429-11	CARBON	10K	5%	1/4W	
R249	1-249-433-11	CARBON	22K	5%	1/4W	
R250	1-249-441-11	CARBON	100K	5%	1/4W	
R251	1-249-405-11	CARBON	100	5%	1/4W	
R252	1-249-405-11	CARBON	100	5%	1/4W	
R253	1-249-421-11	CARBON	2.2K	5%	1/4W	
R254	1-215-445-00	METAL	10K	1%	1/6W	
R255	1-249-429-11	CARBON	10K	5%	1/4W	
R256	1-215-445-00	METAL	10K	1%	1/6W	
R257	1-249-429-11	CARBON	10K	5%	1/4W	
R262	1-215-445-00	METAL	10K	1%	1/6W	
R263	1-249-429-11	CARBON	10K	5%	1/4W	
R264	1-215-445-00	METAL	10K	1%	1/6W	
R265	1-249-433-11	CARBON	22K	5%	1/4W	
R266	1-249-441-11	CARBON	100K	5%	1/4W	
R267	1-249-405-11	CARBON	100	5%	1/4W	
R268	1-249-417-11	CARBON	1K	5%	1/4W	
R269	1-215-445-00	METAL	10K	1%	1/6W	
R270	1-249-429-11	CARBON	10K	5%	1/4W	
R271	1-215-445-00	METAL	10K	1%	1/6W	
R272	1-215-459-00	METAL	39K	1%	1/6W	
R273	1-249-429-11	CARBON	10K	5%	1/4W	
R274	1-249-417-11	CARBON	1K	5%	1/4W	
R275	1-249-405-11	CARBON	100	5%	1/4W	
R276	1-249-433-11	CARBON	22K	5%	1/4W	
R277	1-249-435-11	CARBON	33K	5%	1/4W	
R278	1-249-423-11	CARBON	3.3K	5%	1/4W	
R279	1-249-425-11	CARBON	4.7K	5%	1/4W	
R280	1-249-409-11	CARBON	220	5%	1/4W	
R281	1-249-433-11	CARBON	22K	5%	1/4W	
R282	1-249-421-11	CARBON	2.2K	5%	1/4W	
R283	1-249-417-11	CARBON	1K	5%	1/4W	
R284	1-247-895-00	CARBON	470K	5%	1/4W	
R285	1-247-883-00	CARBON	150K	5%	1/4W	
R286	1-215-459-00	METAL	39K	1%	1/6W	
R287	1-249-429-11	CARBON	10K	5%	1/4W	
R288	1-249-417-11	CARBON	1K	5%	1/4W	
R289	1-249-405-11	CARBON	100	5%	1/4W	
R290	1-249-433-11	CARBON	22K	5%	1/4W	
R291	1-249-435-11	CARBON	33K	5%	1/4W	
R292	1-249-423-11	CARBON	3.3K	5%	1/4W	
R293	1-249-409-11	CARBON	220	5%	1/4W	
R294	1-249-425-11	CARBON	4.7K	5%	1/4W	
R295	1-249-421-11	CARBON	2.2K	5%	1/4W	
R296	1-249-433-11	CARBON	22K	5%	1/4W	
R297	1-247-895-00	CARBON	470K	5%	1/4W	
R298	1-249-417-11	CARBON	1K	5%	1/4W	
R299	1-247-883-00	CARBON	150K	5%	1/4W	
R300	1-215-437-00	METAL	4.7K	1%	1/6W	
R301	1-215-437-00	METAL	4.7K	1%	1/6W	
R302	1-249-421-11	CARBON	2.2K	5%	1/4W	
R303	1-249-423-11	CARBON	3.3K	5%	1/4W	
R309	1-215-453-00	METAL	22K	1%	1/6W	
R310	1-215-453-00	METAL	22K	1%	1/6W	
R311	1-215-461-00	METAL	47K	1%	1/6W	
R312	1-215-453-00	METAL	22K	1%	1/6W	
R313	1-215-453-00	METAL	22K	1%	1/6W	
R314	1-215-453-00	METAL	22K	1%	1/6W	
R315	1-215-453-00	METAL	22K	1%	1/6W	
R316	1-215-453-00	METAL	22K	1%	1/6W	
R317	1-215-453-00	METAL	22K	1%	1/6W	
R318	1-215-453-00	METAL	22K	1%	1/6W	
R319	1-215-453-00	METAL	22K	1%	1/6W	

REF. NO.	PART NO.	DESCRIPTION				REMARK
R320	1-215-461-00	METAL	47K	1%	1/6W	
R321	1-215-453-00	METAL	22K	1%	1/6W	
R322	1-215-453-00	METAL	22K	1%	1/6W	
R323	1-215-457-00	METAL	33K	1%	1/6W	
R324	1-215-461-00	METAL	47K	1%	1/6W	
R325	1-215-461-00	METAL	47K	1%	1/6W	
R326	1-215-461-00	METAL	47K	1%	1/6W	
R327	1-215-457-00	METAL	33K	1%	1/6W	
R328	1-215-457-00	METAL	33K	1%	1/6W	
R329	1-215-477-00	METAL	220K	1%	1/6W	
R330	1-215-469-00	METAL	100K	1%	1/6W	
R331	1-215-477-00	METAL	220K	1%	1/6W	
R332	1-215-457-00	METAL	33K	1%	1/6W	
R333	1-215-421-00	METAL	1K	1%	1/6W	
R334	1-249-433-11	CARBON	22K	5%	1/4W	
R335	1-249-437-11	CARBON	47K	5%	1/4W	
R336	1-215-457-00	METAL	33K	1%	1/6W	
R337	1-215-461-00	METAL	47K	1%	1/6W	
R338	1-215-461-00	METAL	47K	1%	1/6W	
R339	1-215-461-00	METAL	47K	1%	1/6W	
R340	1-215-457-00	METAL	33K	1%	1/6W	
R341	1-215-461-00	METAL	47K	1%	1/6W	
R342	1-215-453-00	METAL	22K	1%	1/6W	
R343	1-249-433-11	CARBON	22K	5%	1/4W	
R344	1-215-445-00	METAL	10K	1%	1/6W	
R345	1-215-469-00	METAL	100K	1%	1/6W	
R346	1-249-429-11	CARBON	10K	5%	1/4W	
R347	1-215-445-00	METAL	10K	1%	1/6W	
R350	1-215-437-00	METAL	4.7K	1%	1/6W	
R351	1-249-429-11	CARBON	10K	5%	1/4W	
R352	1-249-405-11	CARBON	100	5%	1/4W	
R353	1-249-433-11	CARBON	22K	5%	1/4W	
R354	1-249-417-11	CARBON	1K	5%	1/4W	
R355	1-249-421-11	CARBON	2.2K	5%	1/4W	
R356	1-249-393-11	CARBON	10	5%	1/4W	F
R357	1-249-393-11	CARBON	10	5%	1/4W	F
R358	1-249-435-11	CARBON	33K	5%	1/4W	
R359	1-249-429-11	CARBON	10K	5%	1/4W	
R360	1-215-397-00	METAL	100	1%	1/6W	
R361	1-249-421-11	CARBON	2.2K	5%	1/4W	
R362	1-249-425-11	CARBON	4.7K	5%	1/4W	
R363	1-249-425-11	CARBON	4.7K	5%	1/4W	
R364	1-249-413-11	CARBON	470	5%	1/4W	
R366	1-249-421-11	CARBON	2.2K	5%	1/4W	
R367	1-249-433-11	CARBON	22K	5%	1/4W	
R369	1-215-479-00	METAL	270K	1%	1/6W	
R370	1-249-417-11	CARBON	1K	5%	1/4W	
R371	1-247-895-00	CARBON	470K	5%	1/4W	
R372	1-215-469-00	METAL	100K	1%	1/6W	
R373	1-202-735-00	SOLID	22M	10%	1/2W	
R374	1-215-477-00	METAL	220K	1%	1/6W	
R375	1-247-883-00	CARBON	150K	5%	1/4W	
R376	1-249-435-11	CARBON	33K	5%	1/4W	
R377	1-215-437-00	METAL	4.7K	1%	1/6W	
R378	1-215-469-00	METAL	100K	1%	1/6W	
R379	1-249-429-11	CARBON	10K	5%	1/4W	
R380	1-215-437-00	METAL	4.7K	1%	1/6W	
R381	1-215-461-00	METAL	47K	1%	1/6W	
R382	1-249-405-11	CARBON	100	5%	1/4W	
R383	1-249-433-11	CARBON	22K	5%	1/4W	
R384	1-249-425-11	CARBON	4.7K	5%	1/4W	
R385	1-249-417-11	CARBON	1K	5%	1/4W	
R386	1-249-433-11	CARBON	22K	5%	1/4W	
R387	1-215-421-00	METAL	1K	1%	1/6W	
R389	1-249-405-11	CARBON	100	5%	1/4W	
R390	1-249-435-11	CARBON	33K	5%	1/4W	

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REF. NO.	PART NO.	DESCRIPTION				REMARK
R391	1-249-425-11	CARBON	4.7K	5%	1/4W	
R392	1-249-425-11	CARBON	4.7K	5%	1/4W	
R393	1-249-413-11	CARBON	470	5%	1/4W	
R394	1-249-405-11	CARBON	100	5%	1/4W	
R395	1-249-421-11	CARBON	2.2K	5%	1/4W	
R396	1-249-433-11	CARBON	22K	5%	1/4W	
R397	1-249-417-11	CARBON	1K	5%	1/4W	
R398	1-247-895-00	CARBON	470K	5%	1/4W	
R399	1-249-421-11	CARBON	2.2K	5%	1/4W	
R400	1-247-883-00	CARBON	150K	5%	1/4W	
R401	1-249-437-11	CARBON	47K	5%	1/4W	
R406	1-215-431-00	METAL	2.7K	1%	1/6W	
R407	1-215-453-00	METAL	22K	1%	1/6W	
R410	1-247-903-00	CARBON	1M	5%	1/4W	
R411	1-247-903-00	CARBON	1M	5%	1/4W	
R412	1-215-421-00	METAL	1K	1%	1/6W	
R413	1-215-437-00	METAL	4.7K	1%	1/6W	
R414	1-215-445-00	METAL	10K	1%	1/6W	
R415	1-249-405-11	CARBON	100	5%	1/4W	
R450	1-249-429-11	CARBON	10K	5%	1/4W	
R452	1-249-423-11	CARBON	3.3K	5%	1/4W	
R453	1-249-401-11	CARBON	47	5%	1/4W	F
R454	1-249-393-11	CARBON	10	5%	1/4W	
R455	1-249-413-11	CARBON	470	5%	1/4W	
R456	1-249-405-11	CARBON	100	5%	1/4W	
R457	1-249-405-11	CARBON	100	5%	1/4W	
R458	1-249-427-11	CARBON	6.8K	5%	1/4W	
R501	1-249-417-11	CARBON	1K	5%	1/4W	
R503	1-249-437-11	CARBON	47K	5%	1/4W	
R504	1-249-441-11	CARBON	100K	5%	1/4W	
R505	1-215-421-00	METAL	1K	1%	1/6W	
R506	1-249-430-11	CARBON	12K	5%	1/4W	
R507	1-249-417-11	CARBON	1K	5%	1/4W	
R508	1-249-429-11	CARBON	10K	5%	1/4W	
R509	1-249-417-11	CARBON	1K	5%	1/4W	
R510	1-249-417-11	CARBON	1K	5%	1/4W	
R511	1-249-429-11	CARBON	10K	5%	1/4W	
R512	1-249-429-11	CARBON	10K	5%	1/4W	
R513	1-249-429-11	CARBON	10K	5%	1/4W	
R514	1-249-433-11	CARBON	22K	5%	1/4W	
R515	1-249-421-11	CARBON	2.2K	5%	1/4W	
R516	1-249-421-11	CARBON	2.2K	5%	1/4W	
R517	1-249-421-11	CARBON	2.2K	5%	1/4W	
R518	1-249-433-11	CARBON	22K	5%	1/4W	
R519	1-249-433-11	CARBON	22K	5%	1/4W	
R520	1-249-429-11	CARBON	10K	5%	1/4W	
R521	1-215-421-00	METAL	1K	1%	1/6W	
R522	1-215-421-00	METAL	1K	1%	1/6W	
R523	1-215-421-00	METAL	1K	1%	1/6W	
R524	1-215-421-00	METAL	1K	1%	1/6W	
R525	1-215-449-00	METAL	15K	1%	1/6W	
R526	1-215-449-00	METAL	15K	1%	1/6W	
R527	1-215-449-00	METAL	15K	1%	1/6W	
R528	1-215-449-00	METAL	15K	1%	1/6W	
R529	1-215-443-00	METAL	8.2K	1%	1/6W	
R530	1-215-449-00	METAL	15K	1%	1/6W	
R531	1-215-449-00	METAL	15K	1%	1/6W	
R532	1-215-443-00	METAL	8.2K	1%	1/6W	
R533	1-215-421-00	METAL	1K	1%	1/6W	
R534	1-215-413-00	METAL	470	1%	1/6W	
R535	1-249-429-11	CARBON	10K	5%	1/4W	
R536	1-249-429-11	CARBON	10K	5%	1/4W	
R537	1-249-429-11	CARBON	10K	5%	1/4W	
R538	1-249-427-11	CARBON	6.8K	5%	1/4W	
R539	1-249-427-11	CARBON	6.8K	5%	1/4W	
R540	1-249-405-11	CARBON	100	5%	1/4W	

REF. NO.	PART NO.	DESCRIPTION				REMARK
R541	1-249-429-11	CARBON	10K	5%	1/4W	
R542	1-215-437-00	METAL	4.7K	1%	1/6W	
R543	1-215-437-00	METAL	4.7K	1%	1/6W	
R546	1-249-425-11	CARBON	4.7K	5%	1/4W	
R547	1-249-429-11	CARBON	10K	5%	1/4W	
R548	1-249-421-11	CARBON	2.2K	5%	1/4W	
R550	1-249-405-11	CARBON	100	5%	1/4W	
R551	1-215-405-00	METAL	220	1%	1/6W	
R552	1-215-421-00	METAL	1K	1%	1/6W	
R560	1-249-433-11	CARBON	22K	5%	1/4W	
R561	1-249-433-11	CARBON	22K	5%	1/4W	
R562	1-249-429-11	CARBON	10K	5%	1/4W	
R563	1-249-420-11	CARBON	1.8K	5%	1/4W	
R564	1-249-433-11	CARBON	22K	5%	1/4W	
R565	1-249-429-11	CARBON	10K	5%	1/4W	
R566	1-249-437-11	CARBON	47K	5%	1/4W	
R567	1-215-451-00	METAL	18K	1%	1/6W	
R568	1-215-453-00	METAL	22K	1%	1/6W	
R569	1-247-895-00	CARBON	470K	5%	1/4W	
R570	1-249-421-11	CARBON	2.2K	5%	1/4W	
R571	1-249-425-11	CARBON	4.7K	5%	1/4W	
R572	1-249-431-11	CARBON	15K	5%	1/4W	
R573	1-249-441-11	CARBON	100K	5%	1/4W	
R574	1-249-417-11	CARBON	1K	5%	1/4W	
R575	1-249-425-11	CARBON	4.7K	5%	1/4W	
R576	1-215-453-00	METAL	22K	1%	1/6W	
R577	1-215-445-00	METAL	10K	1%	1/6W	
R578	1-249-429-11	CARBON	10K	5%	1/4W	
R579	1-249-393-11	CARBON	10	5%	1/4W	F
R580	1-249-393-11	CARBON	10	5%	1/4W	F
R581	1-249-389-11	CARBON	4.7	5%	1/4W	F
R582	1-249-425-11	CARBON	4.7K	5%	1/4W	
R583	1-249-429-11	CARBON	10K	5%	1/4W	
R585	1-215-431-00	METAL	2.7K	1%	1/6W	
R586	1-249-427-11	CARBON	6.8K	5%	1/4W	
R587	1-249-433-11	CARBON	22K	5%	1/4W	
R588	1-215-453-00	METAL	22K	1%	1/6W	
R589	1-249-429-11	CARBON	10K	5%	1/4W	
R590	1-249-429-11	CARBON	10K	5%	1/4W	
R591	1-249-429-11	CARBON	10K	5%	1/4W	
R592	1-215-397-00	METAL	100	1%	1/6W	

<VARIABLE RESISTOR>

RV1	1-237-517-21	RES, ADJ, CERMET 5K
RV2	1-237-517-21	RES, ADJ, CERMET 5K
RV3	1-237-518-21	RES, ADJ, CERMET 10K
RV4	1-237-517-21	RES, ADJ, CERMET 5K
RV5	1-237-517-21	RES, ADJ, CERMET 5K
RV6	1-237-517-21	RES, ADJ, CERMET 5K
RV7	1-237-519-21	RES, ADJ, CERMET 20K
RV8	1-237-519-21	RES, ADJ, CERMET 20K
RV9	1-237-517-21	RES, ADJ, CERMET 5K
RV10	1-237-518-21	RES, ADJ, CERMET 10K
RV11	1-237-518-21	RES, ADJ, CERMET 10K
RV12	1-237-519-21	RES, ADJ, CERMET 20K
RV13	1-237-518-21	RES, ADJ, CERMET 10K
RV14	1-237-518-21	RES, ADJ, CERMET 10K
RV15	1-237-519-21	RES, ADJ, CERMET 20K
RV16	1-237-519-21	RES, ADJ, CERMET 20K
RV17	1-237-519-21	RES, ADJ, CERMET 20K
RV18	1-237-519-21	RES, ADJ, CERMET 20K
RV19	1-237-519-21	RES, ADJ, CERMET 20K
RV22	1-237-518-21	RES, ADJ, CERMET 10K
RV23	1-237-518-21	RES, ADJ, CERMET 10K

REF. NO.	PART NO.	DESCRIPTION	REMARK
RV24	1-237-518-21	RES, ADJ, CERMET 10K	
RV25	1-237-518-21	RES, ADJ, CERMET 10K	
RV26	1-237-518-21	RES, ADJ, CERMET 10K	
RV27	1-237-518-21	RES, ADJ, CERMET 10K	
RV28	1-237-518-21	RES, ADJ, CERMET 10K	
RV29	1-237-518-21	RES, ADJ, CERMET 10K	
RV30	1-237-518-21	RES, ADJ, CERMET 10K	
RV31	1-237-518-21	RES, ADJ, CERMET 10K	
RV32	1-237-518-21	RES, ADJ, CERMET 10K	
RV33	1-237-518-21	RES, ADJ, CERMET 10K	
RV34	1-237-518-21	RES, ADJ, CERMET 10K	
RV35	1-237-518-21	RES, ADJ, CERMET 10K	
RV36	1-237-518-21	RES, ADJ, CERMET 10K	
RV37	1-237-518-21	RES, ADJ, CERMET 10K	
RV38	1-237-518-21	RES, ADJ, CERMET 10K	
RV39	1-237-518-21	RES, ADJ, CERMET 10K	
RV40	1-237-518-21	RES, ADJ, CERMET 10K	
RV41	1-237-518-21	RES, ADJ, CERMET 10K	
RV42	1-237-518-21	RES, ADJ, CERMET 10K	
RV43	1-237-518-21	RES, ADJ, CERMET 10K	
RV44	1-237-518-21	RES, ADJ, CERMET 10K	
RV45	1-237-518-21	RES, ADJ, CERMET 10K	
RV46	1-237-518-21	RES, ADJ, CERMET 10K	
RV47	1-237-518-21	RES, ADJ, CERMET 10K	
RV48	1-237-518-21	RES, ADJ, CERMET 10K	
RV49	1-237-518-21	RES, ADJ, CERMET 10K	
RV50	1-237-518-21	RES, ADJ, CERMET 10K	
RV51	1-237-518-21	RES, ADJ, CERMET 10K	
RV52	1-237-521-21	RES, ADJ, CERMET 100K	
RV53	1-237-518-21	RES, ADJ, CERMET 10K	
RV54	1-237-520-21	RES, ADJ, CERMET 50K	
RV55	1-237-520-21	RES, ADJ, CERMET 50K	
RV56	1-237-518-21	RES, ADJ, CERMET 10K	
RV57	1-237-518-21	RES, ADJ, CERMET 10K	
RV58	1-237-519-21	RES, ADJ, CERMET 20K	
RV59	1-237-520-21	RES, ADJ, CERMET 50K	
RV60	1-237-519-21	RES, ADJ, CERMET 20K	
RV61	1-237-519-21	RES, ADJ, CERMET 20K	
RV62	1-237-518-21	RES, ADJ, CERMET 10K	
RV63	1-237-518-21	RES, ADJ, CERMET 10K	
RV64	1-237-518-21	RES, ADJ, CERMET 10K	
RV65	1-237-518-21	RES, ADJ, CERMET 10K	
RV66	1-237-519-21	RES, ADJ, CERMET 20K	
RV67	1-237-519-21	RES, ADJ, CERMET 20K	
RV68	1-237-519-21	RES, ADJ, CERMET 20K	
RV69	1-237-519-21	RES, ADJ, CERMET 20K	
RV70	1-224-250-99	RES, ADJ, METAL GLAZE 2.2K	
RV71	1-237-518-21	RES, ADJ, CERMET 10K	
RV72	1-237-517-21	RES, ADJ, CERMET 5K	
RV73	1-237-517-21	RES, ADJ, CERMET 5K	
RV74	1-237-517-21	RES, ADJ, CERMET 5K	
RV75	1-237-516-21	RES, ADJ, CERMET 2K	
RV76	1-237-512-21	RES, ADJ, CERMET 100	
RV77	1-237-517-21	RES, ADJ, CERMET 5K	
RV78	1-237-518-21	RES, ADJ, CERMET 10K	
**********			
	*1-629-771-11	YA BOARD	
		********	
	*4-360-299-01	HOLDER, LED	
		<DIODE>	
D1	8-719-812-43	DIODE TLG124A	

REF. NO.	PART NO.	DESCRIPTION		REMARK
**********				
	*A-1375-085-A	I BOARD, COMPLETE		
		**********		
		<CAPACITOR>		
C1	1-101-004-00	CERAMIC 0.01MF	50V	
C2	1-101-004-00	CERAMIC 0.01MF	50V	
C3	1-101-004-00	CERAMIC 0.01MF	50V	
C4	1-101-004-00	CERAMIC 0.01MF	50V	
C5	1-101-004-00	CERAMIC 0.01MF	50V	
C6	1-101-004-00	CERAMIC 0.01MF	50V	
C7	1-101-004-00	CERAMIC 0.01MF	50V	
C8	1-101-004-00	CERAMIC 0.01MF	50V	
C9	1-101-004-00	CERAMIC 0.01MF	50V	
C10	1-101-004-00	CERAMIC 0.01MF	50V	
C11	1-101-004-00	CERAMIC 0.01MF	50V	
C12	1-101-004-00	CERAMIC 0.01MF	50V	
C13	1-101-004-00	CERAMIC 0.01MF	50V	
C14	1-101-004-00	CERAMIC 0.01MF	50V	
C15	1-101-004-00	CERAMIC 0.01MF	50V	
C51	1-102-973-00	CERAMIC 100PF	5% 50V	
C52	1-102-973-00	CERAMIC 100PF	5% 50V	
C53	1-102-953-00	CERAMIC 18PF	5% 50V	
C54	1-102-973-00	CERAMIC 100PF	5% 50V	
C55	1-101-004-00	CERAMIC 0.01MF	50V	
C101	1-101-004-00	CERAMIC 0.01MF	50V	
C102	1-124-438-00	ELECT 1MF	20% 50V	
C104	1-124-438-00	ELECT 1MF	20% 50V	
C105	1-124-438-00	ELECT 1MF	20% 50V	
C106	1-136-153-00	FILM 0.01MF	5% 50V	
C107	1-136-165-00	FILM 0.1MF	5% 50V	
C108	1-126-163-11	ELECT 4.7MF	20% 50V	
C110	1-101-004-00	CERAMIC 0.01MF	50V	
C111	1-101-004-00	CERAMIC 0.01MF	50V	
C112	1-101-004-00	CERAMIC 0.01MF	50V	
C113	1-101-004-00	CERAMIC 0.01MF	50V	
C114	1-101-004-00	CERAMIC 0.01MF	50V	
C115	1-101-004-00	CERAMIC 0.01MF	50V	
C116	1-126-163-11	ELECT 4.7MF	20% 50V	
C117	1-130-871-11	FILM 0.01MF	5% 50V	
C118	1-136-153-00	FILM 0.01MF	5% 50V	
C119	1-136-165-00	FILM 0.1MF	5% 50V	
C120	1-101-882-00	CERAMIC 51PF	5% 50V	
C121	1-101-004-00	CERAMIC 0.01MF	50V	
C123	1-101-004-00	CERAMIC 0.01MF	50V	
C124	1-101-004-00	CERAMIC 0.01MF	50V	
C125	1-101-001-00	CERAMIC 0.001MF	50V	
C126	1-101-004-00	CERAMIC 0.01MF	50V	
C127	1-101-004-00	CERAMIC 0.01MF	50V	
C128	1-101-004-00	CERAMIC 0.01MF	50V	
C129	1-101-001-00	CERAMIC 0.001MF	50V	
C130	1-101-001-00	CERAMIC 0.001MF	50V	
C131	1-101-004-00	CERAMIC 0.01MF	50V	
C201	1-101-004-00	CERAMIC 0.01MF	50V	
C202	1-101-004-00	CERAMIC 0.01MF	50V	
C302	1-124-589-11	ELECT 47MF	20% 16V	
C303	1-101-004-00	CERAMIC 0.01MF	50V	
C304	1-124-589-11	ELECT 47MF	20% 16V	
C305	1-101-004-00	CERAMIC 0.01MF	50V	
C306	1-101-004-00	CERAMIC 0.01MF	50V	
C307	1-101-004-00	CERAMIC 0.01MF	50V	
C308	1-124-589-11	ELECT 47MF	20% 16V	
C309	1-101-004-00	CERAMIC 0.01MF	50V	
C310	1-124-589-11	ELECT 47MF	20% 16V	
C311	1-101-004-00	CERAMIC 0.01MF	50V	

I

REF. NO.	PART NO.	DESCRIPTION				REMARK
C312	1-124-589-11	ELECT	47MF	20%	16V	
C313	1-101-004-00	CERAMIC	0.01MF		50V	
C314	1-124-589-11	ELECT	47MF	20%	16V	
C321	1-124-589-11	ELECT	47MF	20%	16V	
C322	1-101-004-00	CERAMIC	0.01MF		50V	
C323	1-101-004-00	CERAMIC	0.01MF		50V	
C324	1-124-589-11	ELECT	47MF	20%	16V	
C325	1-101-004-00	CERAMIC	0.01MF		50V	
C326	1-124-589-11	ELECT	47MF	20%	16V	
C327	1-101-004-00	CERAMIC	0.01MF		50V	
C328	1-101-004-00	CERAMIC	0.01MF		50V	
C329	1-124-589-11	ELECT	47MF	20%	16V	
C330	1-101-004-00	CERAMIC	0.01MF		50V	
C331	1-101-004-00	CERAMIC	0.01MF		50V	
C332	1-124-589-11	ELECT	47MF	20%	16V	
C333	1-101-004-00	CERAMIC	0.01MF		50V	
C334	1-101-004-00	CERAMIC	0.01MF		50V	
C335	1-124-589-11	ELECT	47MF	20%	16V	
C352	1-124-589-11	ELECT	47MF	20%	16V	
C353	1-101-004-00	CERAMIC	0.01MF		50V	
C354	1-101-004-00	CERAMIC	0.01MF		50V	
C355	1-124-589-11	ELECT	47MF	20%	16V	
C357	1-101-004-00	CERAMIC	0.01MF		50V	
C358	1-124-589-11	ELECT	47MF	20%	16V	
C359	1-101-004-00	CERAMIC	0.01MF		50V	
C360	1-124-589-11	ELECT	47MF	20%	16V	
C361	1-101-004-00	CERAMIC	0.01MF		50V	
C362	1-124-589-11	ELECT	47MF	20%	16V	
C371	1-124-589-11	ELECT	47MF	20%	16V	
C372	1-101-004-00	CERAMIC	0.01MF		50V	
C373	1-124-589-11	ELECT	47MF	20%	16V	
C374	1-101-004-00	CERAMIC	0.01MF		50V	
C375	1-124-589-11	ELECT	47MF	20%	16V	
C376	1-101-004-00	CERAMIC	0.01MF		50V	
C377	1-101-004-00	CERAMIC	0.01MF		50V	
C378	1-124-589-11	ELECT	47MF	20%	16V	
C379	1-101-004-00	CERAMIC	0.01MF		50V	
C380	1-124-589-11	ELECT	47MF	20%	16V	
C381	1-101-004-00	CERAMIC	0.01MF		50V	
C382	1-101-004-00	CERAMIC	0.01MF		50V	
C383	1-124-589-11	ELECT	47MF	20%	16V	
C384	1-124-589-11	ELECT	47MF	20%	16V	
C385	1-124-589-11	ELECT	47MF	20%	16V	

<DIODE>

D1	8-719-812-43	DIODE TLG124A	
D2	8-719-812-43	DIODE TLG124A	
D3	8-719-812-43	DIODE TLG124A	
D4	8-719-911-19	DIODE 1SS119	
D51	8-719-911-19	DIODE 1SS119	
D52	8-719-911-19	DIODE 1SS119	
D101	8-719-911-19	DIODE 1SS119	
D102	8-719-911-19	DIODE 1SS119	
D103	8-719-911-19	DIODE 1SS119	
D104	8-719-911-19	DIODE 1SS119	
D108	8-719-911-19	DIODE 1SS119	
D109	8-719-911-19	DIODE 1SS119	
D110	8-719-109-85	DIODE RD5.1ES-B2	
D111	8-719-109-85	DIODE RD5.1ES-B2	
D168	8-719-911-19	DIODE 1SS119	
D201	8-719-911-19	DIODE 1SS119	
D202	8-719-911-19	DIODE 1SS119	
D203	8-719-911-19	DIODE 1SS119	
D204	8-719-911-19	DIODE 1SS119	
D205	8-719-109-85	DIODE RD5.1ES-B2	
D206	8-719-109-85	DIODE RD5.1ES-B2	
D207	8-719-911-19	DIODE 1SS119	
D208	8-719-911-19	DIODE 1SS119	
D209	8-719-911-19	DIODE 1SS119	
D210	8-719-911-19	DIODE 1SS119	
D301	8-719-971-20	DIODE ERC38-06	
D351	8-719-971-20	DIODE ERC38-06	

<CONNECTOR>

I1	*1-566-058-11	PIN, CONNECTOR 6P	
I2	*1-566-058-11	PIN, CONNECTOR 6P	
I3	*1-566-060-11	PIN, CONNECTOR 8P	
I4	*1-566-057-11	PIN, CONNECTOR 5P	
I5	*1-566-057-11	PIN, CONNECTOR 5P	
I6	*1-566-057-11	PIN, CONNECTOR 5P	
I7	*1-566-056-11	PIN, CONNECTOR 4P	
I8	*1-566-056-11	PIN, CONNECTOR 4P	
I9	*1-566-056-11	PIN, CONNECTOR 4P	
I10	*1-566-058-11	PIN, CONNECTOR 6P	
I11	*1-566-060-11	PIN, CONNECTOR 8P	
I12	*1-566-060-11	PIN, CONNECTOR 8P	

<IC>

IC1	8-759-040-53	IC MC14053BCP	
IC2	8-759-040-53	IC MC14053BCP	
IC3	8-759-040-53	IC MC14053BCP	
IC4	8-759-945-58	IC RC4558P	
IC5	8-759-945-58	IC RC4558P	
IC6	8-759-945-58	IC RC4558P	
IC7	8-759-945-58	IC RC4558P	
IC8	8-759-945-58	IC RC4558P	
IC9	8-759-914-03	IC SN74LS06N	
IC51	8-759-001-39	IC MC74HC164N	
IC52	8-759-032-74	IC MC74HC00AN	
IC101	8-759-109-82	IC UPC814C	
IC102	8-752-033-65	IC CXA1158P	
IC103	8-759-109-82	IC UPC814C	
IC104	8-759-014-95	IC MC1495L	
IC105	8-759-109-82	IC UPC814C	
IC106	8-759-109-82	IC UPC814C	
IC107	8-759-109-82	IC UPC814C	
IC108	8-759-109-82	IC UPC814C	
IC109	8-759-109-82	IC UPC814C	
IC110	8-759-109-82	IC UPC814C	
IC112	8-759-007-21	IC MC74HC4053N	
IC113	8-759-007-21	IC MC74HC4053N	
IC114	8-759-014-95	IC MC1495L	
IC301	8-759-924-12	IC LM7805CT	
IC351	8-759-982-44	IC RC79L05A	

<COIL>

L301	1-410-671-31	INDUCTOR	47UH
L302	1-410-671-31	INDUCTOR	47UH
L351	1-410-671-31	INDUCTOR	47UH

<TRANSISTOR>

Q51	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q52	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q101	8-729-107-84	TRANSISTOR 2SC3623A-L	

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